DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation

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Education of an individual may be rapid, that of the masses is laboriously slow; the standards of living may be rapidly changed in the requirements of a single member of society while that society itself retains a dead level of slow change by the evolutionary process. Only by revolutions in any sphere of human conduct and actions are there rapid changes in the mass. The Great War will prove the educator and the revolutionary impetus to higher standards of daily living. The energized soldier returning from camp will quicken the mass.

APPRECIATION OF THE CRAFTSMAN ARISING FROM THE WAR.

IN the suddenness of the change from a peace to a war basis of the Federal Government, many conditions involving stupendous difficulties were encountered. The difficulties extended from government to private enterprises. Many of the big industrial plants were already doing war work for earlier belligerent nations, and the change in their work and program was mostly through increasing production and adapting machinery to special requirements of the Government's war orders. However, the great plants of the heating and plumbing industries were not adapted to the production of ordnance or parts and munitions, except in few instances, but those that were able to do Government work of any kind by changing or enlargements of factory spared no costs in doing their duty. The trade can well be proud of the record of those engaged in production work in their fields in aiding the Government's plans for winning the war.

While doing a work highly necessary to the life and comfort of civilized peoples, the heating and plumbing industries during a war must give preference to the production of food, clothing and guns. From the declaration of war, the energies of the nation were concentrated more and more into necessary war work. Hence these facts tended to demoralize conditions in the plumbing world.

However, the systems of heating, plumbing and sanitation connected with the American armies in the cantonments, concentration grounds, and camps in France, Belgium, Italy and Russia, have required the services of some of our best workmen in civil life. Further, such required the establishment of a military division in Sanitation, ranking in importance with the medical corps of the army.

No armies ever had such sanitary care in past history, thanks to the work and educating influence of the American plumber on the American public. Our soldier boys never realized his value as much as they did, when they landed on foreign soil and needed the cleansing influence of the good old American bath tub and showers, cleansing mind and soul as well as body; the hot water for shaving; the radiators giving his living quarters an even temperature; and many other accommodations that go to make up the ordinary comforts of daily living that we Americans demand without thought of credit for their existence, and which depend upon the plumbing and heating craftsmen.

But the craftsmen, who did not take up the sword nor were engaged in Army work, were doing just as necessary work in keeping the homes and villages and cities fit, seeing that they were kept sanitary and clean, so that the workers behind the boys behind the guns might keep themselves fully efficient, physically and mentally, to turn out the guns and shells and food and clothing, and that the old folks might keep the home fires burning.

The craftsman does not need to be praised, his work and its resulting good is enough. But the public might be induced to show a greater appreciation of his work. Some august luxury-loving members of that slow appreciating public, however, would have to be sent to Europe, and especially into the mudfields of a Flanders' Army Camp to get a proper understanding of what the plumbing and heating trades do to add to his daily pleasures. That socializing and democratizing institution, known as the American draft army, has learned this appreciation from the bitter cold of a mud-soaked trench, where sons of wealth and idleness, shook in common with the farm hand, office man and plumber's son. There each fighter learned the appreciation due the men, who give them the comforts, they find in their homes in America, unequalled in any other part of the world. And if they have not philosophized on the appreciation to show it verbally, on their return home they will express it concretely in their demands for the best in plumbing and the best work of the craftsmen from farm home to skyscraper.

FAULTY STEAM FITTING

Examination of Poorly Designed Systems a Profitable Method of Self-Instruction

By Frederick Grant

THERE is an old axiom, which counsels us to profit by the mistakes of others, and this saying is particularly valuable when applied to steam fitting as a trade or profession. Modern methods of erecting heating systems have been developed, not alone by experimental process, but also by observing and correcting faulty work. In our trade book-knowledge is of but little value unless practically applied.

Examples of faulty steam fitting frequently come to light from unexpected sources. Recently two plans, showing methods of installing a steam heating system, were submitted to the writer for comment and approval. It might be said that the work, as shown by these plans, cannot be considered as examples of faulty fitting because of the fact that, if either system was installed as planned, there would be no difficulty in circulating the steam or warming the building.

Two factors, each of them of importance, should be kept constantly in mind, when the plans for a heating system are designed, namely, efficiency and economy. It is not enough that the system will perform the service desired. It should be efficient and economical in operation and should be planned in such a manner that efficiency can be secured with economy, or with a reasonable expenditure for equipment and maintenance. The plans submitted offer such excellent examples of a lack of appreciation of these details that we shall discuss them and endeavor to show how they could be changed to make the system more efficient in service and much more economical to install and operate.

To properly understand the requirements it is necessary that a survey should be made of the conditions governing the installation of the apparatus. A small two-story building, approximately 30x45 feet in size, is to be heated by low pressure steam. The supply of steam is obtained from a high pressure boiler located in a mill which practically adjoins the building, there being but a few feet of space separating them. The boiler pressure carried is about 80 pounds, and a reducing pressure valve, located on the heating line inside of the mill, reduces the pressure to 5 pounds for use in the heating apparatus.

The building is to be warmed by eleven cast iron radiators, five of which are located on the first floor and six on the second floor. The radiation totals 452 sq. ft. As we are not in possession of the data necessary to properly check this radiation, we assume that the amount provided is sufficient to maintain the temperature desired with average working conditions. In addition to supplying steam for the radiating surface in the building there is a 60 gallon storage tank supplying domestic hot water which is to be heated by a steam coil within the tank.

As previously stated, two plans showing methods of installation are submitted. One plan, showing a two-pipe system, is illustrated by Fig. 1. The alternate plan, showing a one-pipe system, is illustrated by Fig. 2. It will be noticed that the two-pipe plan shows that the returns are flooded by establishing a false water-line. A detail of the method of accomplishing this is shown by Fig. 3. From the fact that it is found necessary to establish a false water-line we infer that there is no basement under the building, or at least only sufficient space, in which to run the main and a dry return. An explanatory note on Fig. 1 which reads, "Start return 6 inches below level of main at this point" is a further evidence of a shallow basement and a reason for the establishment of a false water-line.

Each plan indicates that the condensation is to be wasted to a sewer. The return is shown connected to a Davis trap and the discharge from the trap leads to a sump and finally to a sewer. The method of making the connection to the trap, as used with the one-pipe system, is shown in detail by Fig. 4. This illustration also shows the elevation and pitch of the main. The high point of the main is at A and the low point at B, where an automatic air valve is provided to exhaust the air before the return drops to the trap.

The plan showing the one-pipe system, as illustrated by Fig. 2, is the best one of the two submitted. This system is not only more economical to install than the two-pipe system but it will also give better service and can be operated at less expense.

Considering economy of operation, attention is called to the wasting of the condensation. As a measure of economy this water should be returned to the boiler. The condensation in cast iron radiators is estimated at from .25 to .3 pound per sq. ft. per hour. There is 452 sq. ft. of radiation provided for this job and at a rate of .3 of a pound per sq. ft. the condensation would total 136.6 lbs. per hour. Added to this is the condensation from the submerged coil in the storage tank. The condensation in a submerged coil is much greater than is usually considered. For example, it may be assumed that the cold water supplied to the tank has a temperature averaging 50 degrees Fahr. Suppose that this water is to be warmed to a temperature of 150 degrees, or through 100 degrees, which is a low average. If the contents of the tank is to be heated hourly, 60 gallons must be warmed through 100 degrees. In order to approximate as nearly as possible the actual working conditions we may assume that a tank having a capacity beyond the actual requirements is provided, and that not over one-half of its contents will be used hourly. To heat 30 gallons of water per hour (8⅓ lb. per gallon) through 100

degrees will require the expenditure of 25,000 heat units (30x8½x100). As a pound of steam condensed at 5 lb. pressure gives off 954.6 B. t. u., this will require between 26 and 27 lbs. of steam hourly (25,000÷954.6). This volume of steam is about one-fifth of that required to warm the entire building in zero weather. If a volume of 162.6 lbs. of steam at 5 lbs. pressure is used hourly—135.6 lbs. in the radiators and 27 lbs. in the storage tank—this represents the use of 155,217 heat units, or very nearly 5 boiler horse power (33.305 B. t. u. per hp.).

These data are given to direct attention to the hourly requirements from which the loss can readily be estimated for a day or for the heating season. From any angle the proposition is figured, it is apparent that the wasting of the condensation on this installation will represent a considerable loss, and it therefore should be returned to the boiler. This service may be obtained at a nominal expense by installing a lifting trap, which device will receive the condensation from the system and will deliver it, without any very great loss in temperature, to any place in the boiler room, from which point it can be returned to the boiler by the feed pump, return trap, or whatever method is provided for this service.

Considering the proposition from a financial standpoint, the trap for this service may cost $100 or $125. Suppose that the cost of the trap including installation is $150. This amount is represented by $9 yearly interest at 6 per cent. The saving effected by returning the condensation will soon pay the cost of the trap, and when once paid for it has a yearly earning capacity equal to the saving effected.

The piping systems illustrated by Figs. 1 and 2 show many chances for improvement, particulary the plan of the two-pipe system. In laying out the main for the two-pipe system,—with an evident desire to reduce the length of it, or the amount of large pipe required,—it is located at a considerable distance from the outer wall, thus requiring that several of the branches shall be more than eight feet in length. On many of the branches a change of direction is made, requiring, unnecessarily, the use of extra fittings. A separate branch is used to supply a first and a second floor radiator notwithstanding the fact that the radiator on the second floor is located immediately over the one on the first floor; also, the branches supplying risers to the second floor radiators are 1-inch, the same size as the risers.

All of the details noted are examples of faulty steam fitting. The main should extend around the basement within a distance of not more than three or four feet from the outer wall as, unless absolutely required, it is not considered good practice to make the branches more than three or four feet long. Much better service is obtained when the steam supply is carried in the larger pipe close to the radiators.

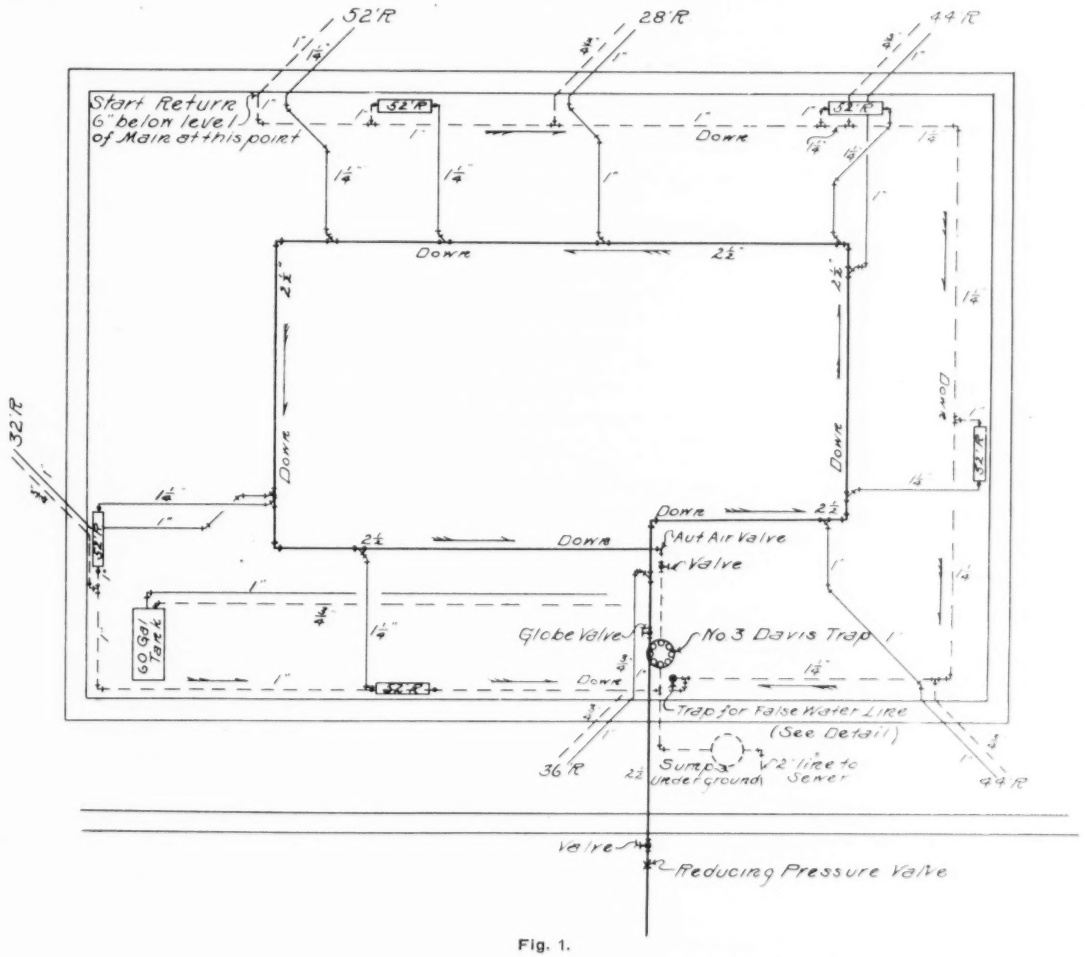


Fig. 1.

All extra or unnecessary fittings on main or branches should be eliminated so far as possible as every fitting added to the piping increases the friction and retards the movement of the steam. When two radiators are located so that one is immediately above the other but one branch from the main is required. The connection to the riser supplying the radiator on the upper floor should be taken from the branch to the first floor radiator, this branch in each case being sufficient in size to serve both radiators. As a general rule, all branches should be one pipe size larger than the riser or radiator connection supplied by it.

The location of the main, the method of running the branches, and the pipe sizes shown on Fig. 2 illustrating the one-pipe system are excellent and the same details could be applied to advantage in laying out the piping for the two-pipe system.

We suggest that for an installation in a building without a basement, or without sufficient space to properly pipe the system, the overhead method of piping can be used to advantage. To apply this method for this building the main steam supply, after being reduced in pressure, should be taken up through the building to the ceiling of the second floor. The top of this riser then becomes the high point of the piping and from this point the main should extend around the ceiling a short distance from the outer wall.

The main is given a slight pitch downward in making the circuit in the same manner as though installed in the basement. The radiators are supplied by drop risers and the branches to the risers are taken from the bottom of the main with a 45-degree connection (known as the D connection), which method permits of a reduction in the size of the main as a number of radiators are connected. The fact that the main is drained of accumulated condensation at each connection to a branch makes practically its full area available for conveying the steam. For example, after the first three branches supplying 192 sq. ft. of radiation are connected the main on this job can be reduced to 2 inches, and it can be still further

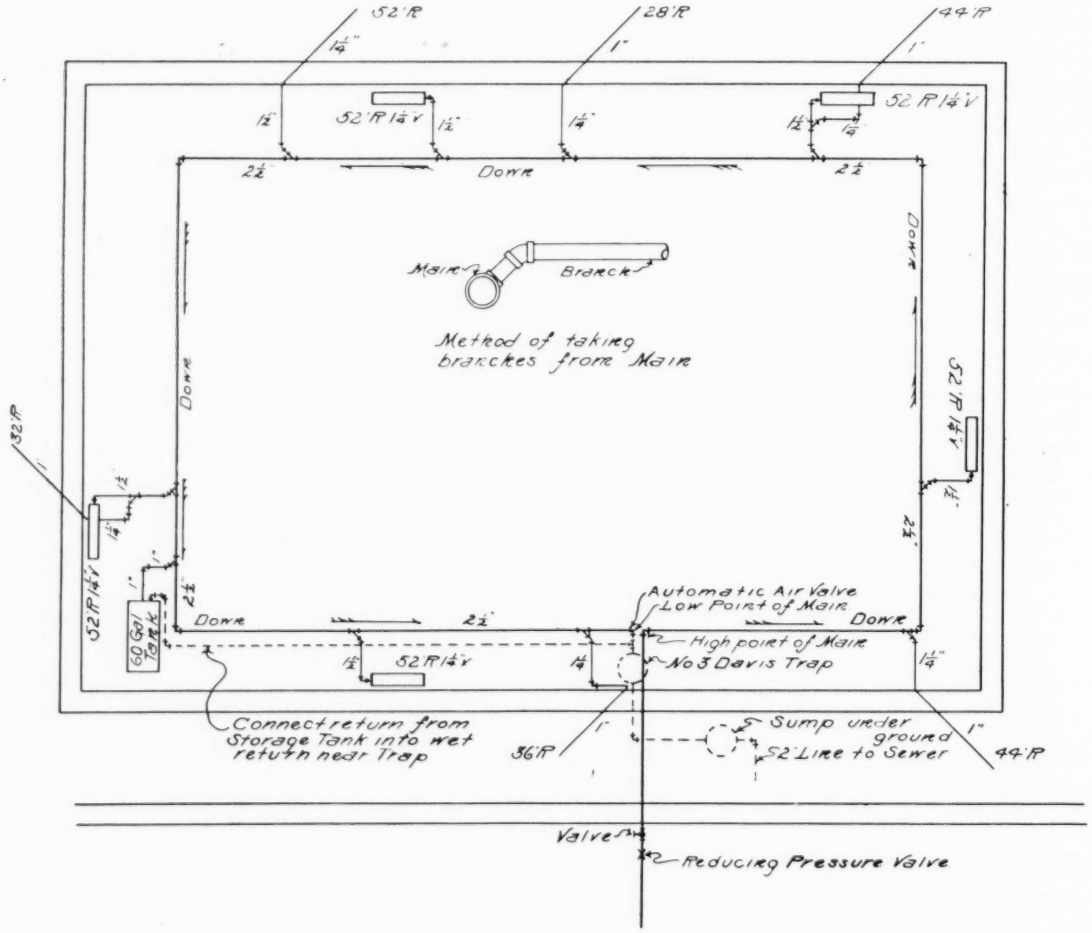


Fig. 2.

reduced to 1½ inches as soon as the next three or four branches are taken from it. This method will materially reduce the cost of the piping system.

The main for the two-pipe system, as shown by Fig. 1, can be reduced in this same manner provided eccentric fittings are used at the points of reduction. As planned, all flow branches and risers drain back directly into the steam main, and provision must be made for the free and continuous flow of condensation through it. If the main is to continue 2½ inches in size from beginning to end, it is sufficiently large to convey the steam and also the returning water of condensation, and if desired the separate return and the false water-line may be omitted and the condensation from each radiator and return riser

can enter the bottom of the main through a trapped connection as illustrated by Fig. 5. The elbow immediately below the main should be tapped and a drain cock supplied as shown at A on the illustration. This method of returning condensation is frequently used on work

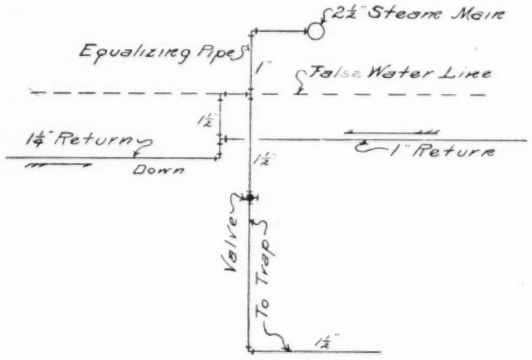


Fig. 3.

where conditions are such that it is not convenient to run a separate return.

If single return connections are trapped, or if the

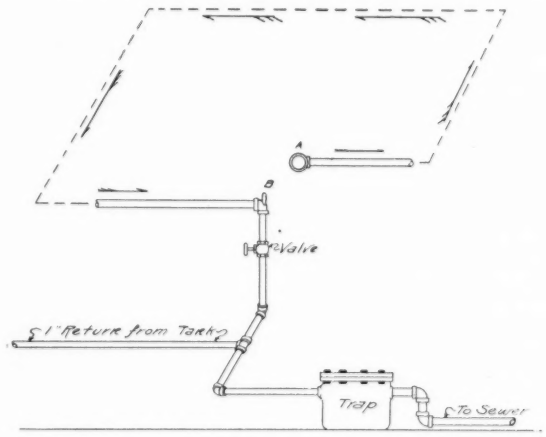


Fig. 4.

whole return system is trapped by a false water-line, these pipes should be well covered or protected against the possibility of freezing. Attention is directed to Fig. 3

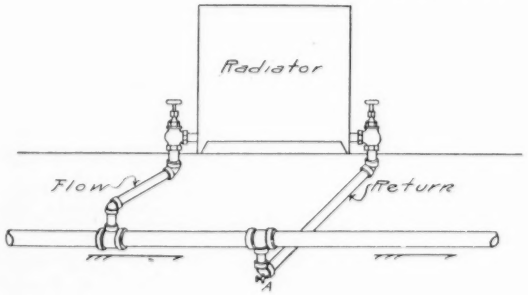


Fig. 5.

showing the method of establishing the false water-line. The seal should be by-passed to the vertical return leading to the trap and a valve should be placed in the by-pass. This will provide a means of draining the seal when required or when it is desired to completely drain the system.

The fitter who pays particular attention to drainage, expansion, and the removal of air, will have overcome the most serious of the difficulties which interfere with the proper operation of a heating system.

SHOP COMMITTEE ADJUSTS DIFFERENCES BETWEEN EMPLOYER AND EMPLOYEE.

Shop committees for adjusting employees' grievances, and thus avoiding industrial disturbances, are being established and are working successfully in a number of American factories, according to bulletins issued by the Economics Division of the Information and Education Service, United States Department of Labor.

A Massachusetts shipbuilding concern, for example, has a shop committee in each department of the plant, whose members consist of employees elected by secret ballot. The chairman of these committees compose a joint shop committee, which deals with all questions relating to wages and general welfare of employees. This committee meets regularly every day.

The employment manager, service manager, and one member of the joint shop committee compose a grievance committee, which meets when it is called and deals with petty grievances and all matters pertaining to agreements when employed. Usually it can settle any dispute between an employee and his department, but when it cannot the matter is referred to the joint shop committee.

A large metal finishing plant in the state of New York started shop committees as a result of a strike, which it was found could have been avoided had there been means of discussion between the company and its men. Since the adoption of the plan every complaint has been adjusted satisfactorily. The plan is as follows:

Each department has an accredited representative on the committee, which elects an executive committee of five. The representatives meet every Friday and two representatives of the management meet the executive committee in an office set aside for the purpose of discussing and adjusting grievances.

All complaints must be made in writing and submitted to the department representative by the complainant. The representative tries to adjust the matter with his foreman. If he fails he submits it to the next meeting of the shop committee. If the representatives cannot adjust the grievance they turn it over to the executive committee, which takes it up with the representatives of the management. If they fail to agree the complaint is referred to the factory manager, who must take it up with a representative selected by the executive committee. In case this resort fails the dispute is passed on to the arbitration committee, whose decision is final and binding on both sides. The arbitration committee consists of five men, two selected by the management, two by the executive committee, and the fifth by these four.

The Way They Work.

"Have you any alarm-clocks?" inquired the customer.

"What I want is one that will arouse the girl without waking the whole family."

"I don't know of any such alarm-clock as that, madam," said the man behind the counter; "we keep just the ordinary kind—the kind that will wake the whole family without disturbing the girl."—Tit-Bits.

Patriotism does not cease when fighting ceases. Keep on buying United States War Savings Stamps.

SOMETHING ABOUT AIR CHAMBERS *in* PLUMBING SYSTEMS

Air Chambers Are Elastic Cushions, Which Prevent Water Hammer and Make Plumbing Noiseless—When and How to Apply Them

By Robert J. Gordon

AN air chamber, as understood in plumbing, is a hermetically sealed vessel containing air. It is usually employed in connection with water piping or pumping appliances. Its purpose is to act as a cushion to the water and prevent "water hammer," or pounding noises, which are frequently heard in plumbing and water works systems, where air chambers are not used, or are not in order.

It is not our purpose in this article to go deeply into the fundamental principles, as previous articles in "Domestic Engineering" have more or less covered that important subject. We will, however, look into the matter from a practical viewpoint.

Let us first realize that water is a non-compressible liquid, while air is a compressible fluid and very elastic. A certain property of water is that, although a fluid, it can hit like a hammer on an anvil, when suddenly stopped in its forward motion. That is because water is non-elastic.

Strike an anvil with an iron hammer, and you hear the sound. Furthermore the hammer rebounds, and if given freedom, will "rat-a-tat" several blows after the main blow has been struck. That is the reaction.

If the anvil, or the hammer, were made of a soft yielding material, such as rubber, you would not hear the blows, at least not so well. They would be so faint as not to be noticeable outside the shop. But the hammer would recoil and repeat the blows as in the first case. That is about the way with water and air chambers in plumbing.

You open a faucet at the end of a long line of pipe; water flows swiftly from it. All the water in the pipe line is rushing toward that faucet. Perhaps its entire weight is 50 pounds. Suppose its velocity is 30 feet a second, or 1,800 feet a minute, and suppose the valve is closed instantly, what happens to all the energy which is stored up in that body of water? It will pound against the valve and the sides of the pipe, just like an iron hammer on an anvil.

The force of the blow from a weight of 50 pounds hitting the pipe with a velocity of 30 feet a second may burst the pipe, ruin the valve, or rupture a range boiler, if one is connected to the line. Its force will be like that from a 50 pound iron pile driver falling at a speed of 30 feet a second on a steel pile.

Now do you see how water hammer may be produced in a plumbing job? An air line does not act that way. Close an air cock on the end of a long air line, as suddenly as you please, and the air will not pound. It comes to rest slowly by accumulating pressure. It is elastic and cushions itself.

To prevent water hammer in a simple long line of water piping, plumbers frequently resort to installing an air chamber on end of line just over the valve or cock, as in Fig. 1.

The height of the air chamber, and its diameter will depend a great deal upon the length of the line, or rather the volume of water in the line.

A case like Fig. 2, if piped up without a large air chamber, certainly would pound, particularly if faucet closes quickly. This is supposed to represent a ¾-inch service

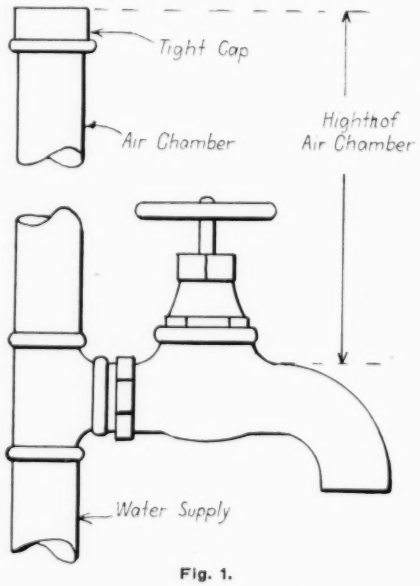


Fig. 1.

pipe, supplying a barn from a street main 300 feet away. Only one faucet is on the line.

That line would pound fiercely without an air chamber. It might even reverberate with repeated shocks from the re-coils.

A small air chamber, like that shown in Fig. 1, will be of little use in this line, unless it be very long, say 5 feet or more. Five feet of ¾-inch pipe does not hold much air. It would be far better to make it 5 or 10 feet of 2-inch pipe. Then we would have an air chamber worthy of the name.

It does not matter, of course, how large the air chamber is on a case of this kind, as far as permanent service is concerned. Because every air chamber, no matter how big, will ultimately lose its air on service of this kind. It will require to be re-charged periodically. The larger the air chamber, the tighter it is, the warmer the water, and the lower the pressure, the longer will it remain charged with air. That means, the longer will it work.

In Fig. 2 there is nothing to replenish the air automatically to compensate for its absorption by the water. The air will be absorbed from that chamber by the cold water, in spite of anything. That is a fact because the power of water to absorb air increases with the pressure, coldness of the water, and its activity in the line.

Suppose the air chamber in Fig. 2 works satisfactorily for three months after installation. The faucet has been opened and closed frequently during that time. Then, without warning, and with the usual service, the pipe begins to pound. A skilled plumber, of course, knows that the air chamber has lost its air. It is now full of water; consequently the pipe hammers when the faucet is closed.

The remedy, as any practical plumber can see, is to shut off the water at the stop and waste cock under the faucet, and open the faucet. Air rushes in through the faucet to replace the water, which is being drained out of the air chamber by the waste hole in the stop cock.

As soon as water stops running at waste hole, shut the faucet tight, thereby confining the air. Then open stop and waste cock again. The water pressure immediately compresses the air up into the air chamber, and thus re-charges it.

Any layman can do that, when he knows how. It is up to plumbers to inform the owners of buildings, janitors, keepers of estates, etc., about such things as that. Then they will get more satisfactory service out of the plumbing.

Air chambers are used for more things than merely cushioning the blow at the end of a line. They are used for equalizing an intermittent flow. They also are employed as a means of power storage to give pressure to water, as in the pneumatic storage tanks, which are now used very extensively in modern plumbing installations as can be surmised by the number we see advertised regularly in the columns of this paper.

Let us now consider the application of an air chamber to a case where an intermittent and jerky flow has to be steadied before going to the plumbing system piping. Some forms of pumps deliver water in jerks so to speak. Each stroke of the pump squirts out its own displacement. One instant there is a large volume of water being pushed into the discharge pipe by the pump. The next instant there is none, or practically none. If such a pump delivers directly into a system of piping, such as street mains or house piping, there will and must be a horrible pounding at the pump and in the lines. A water works pump going that way can telephone the noise throughout a large district by means of the piping, which carries the sound to the houses.

To stop such a noise, that is to say, one caused by water hammer and not by actual "knocking" of the pump's parts, it is only necessary to install a good-sized air chamber on the outlet end of the pump. Such an air chamber is shown in elevation by Fig. 3. A tee is bolted to pump outlet. The air chamber is bolted to top of tee. The delivery pipe screws into a threaded outlet at side of tee. There is a check valve on delivery pipe near tee, and two ⅜-inch pet cocks are screwed into side of tee, one being above the other. Of course, under the tee and in the pump are the pump discharge valves.

Water is delivered up into tee from pump. It comes irregularly, a gush with every stroke. It delivers into air chamber as well as into delivery pipe. The air in top of air chamber is the cushion, which allows the water line in air chamber to rise and fall with the pulsations of pump. This holds the pressure in tee practically uniform, in spite of the pump pulsations. Therefore, there being a uniform pressure in tee it follows that water must flow uniformly from tee into the delivery or discharge pipe. No plunger or piston pump should be without a good air chamber.

Centrifugal pumps do not require air chambers as a rule; but old plunger and piston pumps do. Not only that, but these air chambers must always be well charged with air. When they lose the air, they are useless. It is the engineer's duty to see that each air chamber is replenished

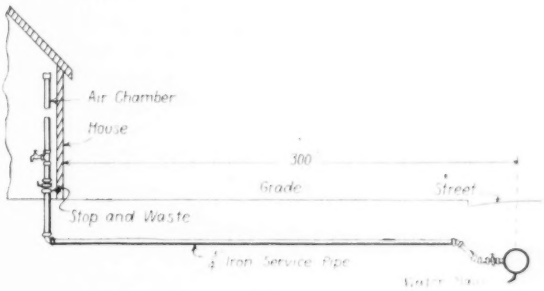


Fig. 2.

with air always, when it shows signs of having lost it. And it is the plumber's duty to see that provision is made for refilling the air chambers, because it is certain that they will lose the air sooner or later and must be refilled with air. That means that cocks must be provided for the purpose. We have done that in Fig. 3. The pet cocks shown are used for replenishing. When pump is working they are closed. When pump is shut down, they may be opened. When they are both open, the lower one drains out all the water down to its level, and the upper one lets in the air.

Thus the air chamber, the tee fitting and the delivery pipe, as far as check valve, become filled with air at atmospheric pressure. Before starting up the pump again, both cocks are closed. Then all the aforesaid contained air is driven up into the air chamber by the water and trapped there.

The larger the quantity of air that can be pushed into air chamber the better. It makes a larger cushion, which means a smaller pressure variation in the tee fitting. Furthermore, the opening between tee and air chamber must be large. It should never be less than delivery port from pump. That is quite evident, when we realize that there should be a minimum of resistance to the flow of water up into and down from the air chamber.

If, in recharging an air chamber for a pump delivery line, the drain cock is tapped into the chamber, say at the bottom just above the flange, then the chamber will have too little air when pressure is on. A pressure of 15 pounds will raise the water line up to almost the middle of the air chamber bulb. A pressure of 60 pounds will compress the air into about one-fourth of the chamber space. This is usually not enough cushion. It does not sufficiently equalize the pressure at entrance to delivery pipe. Therefore, the plan shown in Fig. 3 is better by far than having pet cocks on the air chamber itself. The idea of putting a pet cock on top of air chamber to let in the air, when lower pet cock is opened, is wrong. It is wrong because you cannot depend on the pet cock

being absolutely air tight, and staying air tight. The least leakage of air at that cock, or anywhere in air chamber above the water line, will soon allow the air to escape. It will escape without being noticed. Then trouble will ensue. But when the air cock is submerged below the working water line, as in Fig. 3, the case is different. If the cock then leaks, it will leak water, which can be seen and will not affect the air chamber at all.

Of course, there are different ways of re-charging air chambers on pumps, and different mechanics have their own pet ideas on the matter. Although the writer pre-

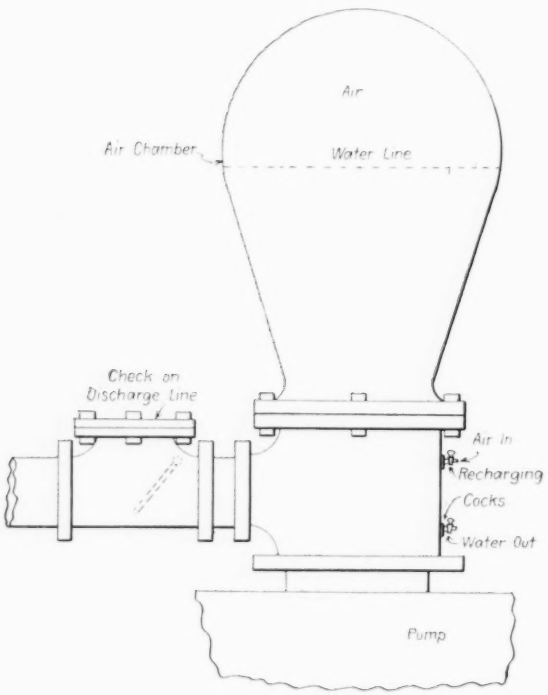


Fig. 3.

fers the plan shown in Fig. 3, he does not wish to infer that it is the best for all cases. He does, however, believe it is better for all cases than simply having the pet cocks tapped into the air chamber body.

It may be that a pump is in action all the time and cannot be shut down to recharge the air chamber. In such a case it may be advisable to tap a pet cock into suction end of pump in such a manner that a little air can be sucked into pump along with the water. Perhaps a pet cock screwed on top of suction pipe near pump would fill the bill better than anything else. It all depends on conditions which plan will be best.

When air is sucked in through suction pipe, then it might be well to have a pet cock screwed into base of air chamber to let the engineer know when the chamber has been filled with air.

The filling process is as follows: Pump has been showing signs of beginning to pound. Engineer knows it needs air, as that is a sure symptom. He opens pet cock just a little at base of air chamber and water drips out. Next he opens pet cock a little on suction pipe, the pump meanwhile continuing its service of pumping water. He hears the air being sucked into pump through pet cock on suction line. If he opens it too much, the pump cylinders may get too much air, and pump may jerk. But experience will soon teach him how much air he may allow.

Some of the air so sucked in will become absorbed by the water in the pump cylinder, when subjected to full pump pressure. The remainder, however, will escape with the water, get into the tee (see Fig. 3) and rise up into the air chamber. As soon as air chamber is refilled with air down to the air cock, previously mentioned, and which we said may be tapped into bottom of air chamber, this pet cock will stop leaking water, and will now sizzle air. That tells the whole story to the engineer, who then closes both pet cocks and lets the pump run again, until he thinks it is time to replenish its chamber.

LEAD AND ZINC IN 1918.

The mine output of lead and zinc in the United States declined greatly in 1918, according to a statement compiled by C. E. Siebenthal of the United States Geological Survey, Department of the Interior, from reports and estimates by producers and from the records of the Bureau of Foreign and Domestic Commerce. The output of soft lead by mines of the Mississippi Valley and eastern states was about 250,000 short tons, and that of argentiferous lead by mines of the western states was about 313,000 tons, a total of 563,000 tons, compared to 273,046 tons and 378,110 tons respectively and a total of 651,156 tons in 1917, a decrease of nearly 100,000 tons. The decrease in output of domestic lead was partly made up by an increase in imports of lead in ore and bullion, particularly from Canada and Mexico, which are estimated at 14,100 tons and 78,600 tons respectively, against 5,867 tons and 62,891 tons in 1917.

The recoverable zinc content of ore mined in 1918 was about 627,000 tons, compared with 711,192 tons in 1917. The output of the eastern states was about 127,000 tons, of the central states about 297,000 tons, and of the western states about 203,000 tons, compared with 155,169 tons, 310,471 tons, and 245,552 tons by those divisions in 1917. The output of the central states fell off proportionately less than that of the other sections. Montana apparently had the largest output, with 105,000 tons, and New Jersey and Oklahoma were next, with about 100,000 tons each. The imports of zinc in ore fell off from 72,470 tons in 1917 to 24,000 tons in 1918. The zinc imports from Mexico decreased from 45,697 tons in 1917 to 18,000 tons in 1918.

METAL PRICES IN GERMANY.

Following upon the cessation of hostilities maximum prices for metals were fixed in Germany as follows: Copper, 450 marks per 100 kilos (£225 a ton); tin, 1,400 marks (£700); nickel, 1,500 marks (£750); lead, 76 marks (£38); spelter, 130 marks (£65); ditto fine, 158 marks (£79); antimony, 230 marks (£115); and aluminum, 700 marks (£350). The British equivalent is taken on the pre-war exchange basis. These prices have now been cancelled, but a number of regulations to check profiteering remain in force and consumers may obtain licenses to buy approved quantities from the War Metal Co., at the old rates.

What He Wanted to Pass.

On an American transport two days out from New York:

First Sambo (who is really enjoying the sea, to his dark companion, who has gone below): "Nigger! Come on up! We're passing a ship!"

Voice from Below: "I don't want to see no ship. You jes' call me when we're passing a tree!"—"Tit-Bits."

LEGAL QUESTIONNAIRE

*What Relation Does an Architect Bear to an Owner, and What Powers Has He to Bind the Owner to Contracts for Extras, and the Like?**

By "The Judge"

An Architect, in His Relation to a Builder, is an Agent of the Owner with Limited Power to Incur Liability on Behalf of the Owner.

Editor "Domestic Engineering":—I have become involved in a dispute with an architect over the provisions of a set of specifications. That part of the situation, however, is not bothering me so much as the general one: What relation does an architect bear to the contractor and to the owner; for what is he liable to the contractor and to the builder; and what powers has he to bind the owner to contracts for extras, and the like?

I have had some experience with architects, but have never really understood just what their relations to the parties might be, in the eyes of the law. For instance, suppose that we, the architect and I, cannot straighten out our dispute over the specifications, is the architect's opinion final or have I a right to somebody else's judgment or decision, even if it be a court of law?

W. T. E.

Answer:—In your experience with work, over which architects have supervision, you have undoubtedly become familiar with the usual "Uniform Contract," so-called, which has been adopted and recommended by the American Institute of Architects and the National Association of Builders. One of the provisions of such a contract, which I understand is almost universally used whenever an architect is a party to a piece of work, provides: "It is understood and agreed by and between the parties hereto that the work, included in this contract, is to be done under the direction of the said architects, and that their decision as to the true construction and meaning of the drawings and specifications shall be final * * *." Another provision of contracts of this kind is: "It is further mutually agreed between the parties hereto that no certificate given or payment made under this contract, except the final certificate or final payment, shall be conclusive evidence of the performance of this contract, either wholly or in part, and that no payment shall be construed to be an acceptance of defective work or improper materials." Still another provision states that in cases of dispute over the payments for extras or changes, and for loss due to delays, for which the owner is responsible, the matter shall be referred to arbitration.

If your present contract is being performed under a similar contract, it would seem as if the decision of the architects, as to the construction to be placed upon the specifications, is final. This is so because no provision is made for reference to arbitration in such a case. Therefore, unless you could show that the architect's decision is not made in good faith or is made for the purpose of preventing you from finishing the contract as intended, it is probable that you could not successfully overcome the decision of the architect as to the meaning of the specifications.

Another hold, which an architect would have in a case similar to yours, is, that his final certificate is necessary before you can successfully claim payment for your completed work. In a previous issue of "Domestic Engineering" (August 10, 1918), I discussed a case in which the final certificate of an architect was involved. Unless you can prove fraud or lack of good faith, it is pretty hard to overcome this provision that a final certificate is necessary to your completion of the work. All that an architect has to do in order to compel a builder to conform to his (the architect's) wishes in my dispute, is to withhold his final certificate and prove that he had reasonable grounds for taking his position.

Where an architect is employed as an architect to prepare plans, or plans and specifications for a building, and also to supervise the erection of a building, his relation to his employer extends no further than the performance of those services; his powers as agent of the owner are limited by the contract which he has with the owner. It behooves a builder, therefore, to know what that contract between the owner and the architect really provides. In the case of a written contract such as the "Uniform Contract" above referred to, it is a comparatively simply matter to know what the architect's powers are.

An architect has authority to proceed in the usual way with the work, and the owner may constitute him a general agent for all purposes connected with the erection of the building; but apart from an agreement to that effect, an architect is not a general agent of the owner and has no authority to bind the owner by contract for any work done or materials furnished for the building concerning which he is employed. Do not forget, when dealing with this class of cases, that your contract is with the owner, and that the architect is given power to act by the owner and the owner alone. Your relation to the architect and any contract you may enter into with the architect, such as complying with orders for extras, are based entirely upon your agreement with the owner and the extent of the agency, which you can prove existed as a matter of fact between the owner and the architect.

The powers of an architect to act as an agent for the owner are strictly construed, so much so that if he orders work to be done which are "extras" and he gives the orders orally, instead of in writing, as required by a contract, he cannot bind the owner to pay for the extras so

*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the very Nature of the Service, which is rendered without a personal Interview.—Editor.

ordered. This phase of the situation was discussed more fully in "Domestic Engineering," March 2, 1918.

As a general proposition an architect, who superintends the erection of a building, has no authority to make alterations in the plans and specifications and bind the owner for extra work, or to make any changes in the original contract between the builder and the owner, unless the power to do so is conferred upon him by the contract, either in express terms or by necessary implication. Thus, where an architect is authorized to order extra work and make alterations in a specified manner, the owner will not be liable to the contractor for the work, unless the extra work or changes are carried out according to his agreement with the architect. So, under a power conferred upon an architect to determine disputes as to the true construction or meaning of drawings or specifications, he may dispense with requirements contained in the specifications, except that he cannot dispense with the performance of any substantial part of the contract. Unless such authority is conferred upon him by his contract with the owner, an architect has no power to extend the time for completing the work or to accept a class of work or materials inferior to or different from that called for by the contract.

While an owner may ratify the acts of an architect as his agent, as in other classes of agency, it does not follow that an acceptance of the work by an owner after its completion is a ratification of all that was to be done, unless the owner had full knowledge, or as a reasonable man should have had full knowledge, of all that was done.

The decision or order of an architect once made or given, which is within the provisions of his contract of agency with the owner, cannot be revoked, but the general authority of an architect to act for the owner can be revoked, if he is paid for his services, as in any other case of agency.

Because of the many difficulties, which arise or which might arise in the matter of an architect's duties and liabilities under a contract, some states have enacted statutes regulating the practice of the architect's profession, which require that those who engage in that profession must obtain a license or certificate from a board of examiners or other board designated by the law.

As most builders, particularly those who contract for the erection of large buildings, come in contact with the owner comparatively little after the preliminary negotiations, and have all their dealings with the architect in charge, they gradually get to feel that the architect is the one person with whom they are dealing. Builders should keep in mind the fact that their contract is with the owner and that when they deal with an architect they are dealing with one, who is nothing more nor less than an agent of the owner with certain defined powers. It is true that an architect has become, more and more, what might be termed an "arbitrator" between the owner and the builder, and he has, in so far as he may be termed an "arbitrator," very wide and extensive powers. The builder, by signing the so-called "Uniform Contract" with the owner as the second party, practically agrees that the architect's decision in all questions, concerning the carrying out of the work as specified, is to all intents and purposes, the final decision. If the criticism is made that the architect has very great powers under such a contract, the answer is that the builder does not have to take the work or sign such a contract, unless he is willing to abide by the architect's decision.

Most architects, especially those who have a large practice, are not unreasonable in their demands upon a responsible builder, for they are dependent, to a certain extent, upon their ability to secure good workmen and workmanship, if they are to continue to be successful in their profession. In one case, in my own experience, the architect involved in the case, practically won my client's case for him by his testimony against an owner and by so doing lost a valuable client of his own.

An architect's inability to bind his owner, in the eyes of the law, is based to a certain extent upon the fact that an architect's relations with the owner are relations of trust and confidence. The wise owner selects a competent, trustworthy architect and then places himself unreservedly in his power, as far as decisions regarding the work are concerned. For instance, in one case an owner employed an architect to make plans and specifications for the erection of a house and to do other things, which architects usually do as such, and where the owner then employed a contractor to do all the work, and placed the money due the contractor in the hands of the architect to be paid upon the contractor's order, it was held that these facts did not warrant a jury in finding that the architect was made the general agent of the owner and as such could make new and independent contracts for purchases with other parties.

It therefore follows that the relation between a builder and an architect is: That the architect is the agent of the owner for a specified purpose, with certain limitations which are either expressed or are implied as a part of his work; and he is, in addition, when it is so provided by written contract, the final judge of the meaning and execution of his specifications and plans. In cases where extras are ordered or changes made without an agreement as to the price, the architect does not decide what is the reasonable price, but leaves that to the owner and contractor, who either settle that point beween them or by arbitration.

When I say that the architect is the sole judge of the meaning of his specifications and plans and the manner in which they should be carried out, I mean that the courts will go a long way to uphold an architect in his interpretation. I do not mean that in every conceivable instance a builder would be bound by the architect's decision, because, if the architect made some impossible ruling or one which proved by its very assertion that he was either crazy or not acting in good faith, a court of law would give you a remedy and would furnish you with a construction to be placed upon the meaning of the specifications. But you would have to have a very strong case and prove that the architect was not acting in good faith, or that his claims were actually made with fraudulent intent, to secure a decision in your favor from a court. As was ruled in a recent case:

"It would seem to be settled that the engineer or architect of one of the parties may legally act as arbitrator of all disputes between the parties as to the construction of the contract, or arising out of or incidental to the performance of the contract, if, in the absence of bad faith or fraud, he shall be chosen by all the parties to the contract with knowledge of his employment, even though from the nature of the employment he may be prejudiced and biased."

Work has been started on the first unit of the new city hall at Nevada City, Cal. F. Warton has the general contract; the Globe Electric Co., will do the electric work; T. J. Kennedy will install the heating system, and the plumbing is to be installed by the Grass Valley Hardware Co.; all of Nevada City.

QUESTIONS & ANSWERS

HEATING THREE SMALL GARAGES WITH OVERHEAD STEAM COIL.

Editor "Domestic Engineering":—The accompanying sketch shows the layout of a steam heating system, heating three small garages from boiler in an adjoining building by overhead steam main with underground return. The return is trapped about 18 inches going into the boiler. The trouble is this that the condensation will not

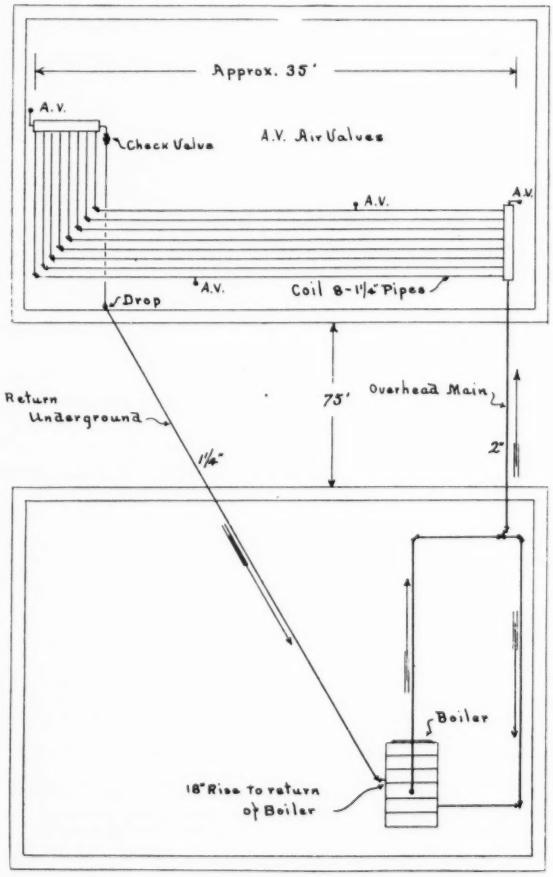


Fig. 1.

return to the boiler. We have a check valve on the return at the manifold.

There is about 75 feet from building to garages. The main is a 2-inch pipe, the return 1¼ inches, and the manifold 1¼ inches. The eight coils are about 35 feet in length.

How can we fix the trouble?

Illinois. W. M. T.

If we understand the above inquiry correctly, correspondent is heating three small garages with an overhead coil, which extends practically the entire length of the garage building, or through the three divisions of it. Fig. 1 shows the installation according to the sketch submitted.

The steam main from boiler is in the form of a loop, and from this loop a 2-inch overhead main is taken across the space, separating the buildings. This space is given as 75 feet. The 2-inch main enters the garage building

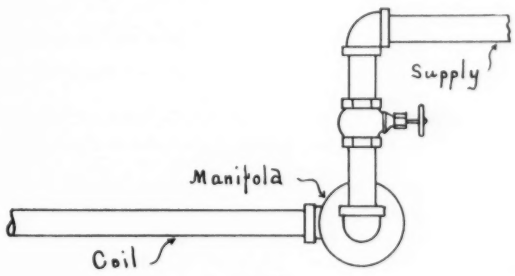


Fig. 2.

overhead and supplies the coil in the manner shown. The return from the coil evidently drops within the garage to a point below grade, and is then run underground to the boiler cellar. This condition brings the end of the return at the boiler about 18 inches below the return tapping of it.

While the coil (an eight-pipe mitre coil) is only 35 feet long, correspondent seems to have had trouble due to air binding, as the sketch submitted shows several air valves located at various points on the coil. A check valve is located on the return near the return manifold of the coil. This check should be removed, as it is the primary cause of the trouble reported.

There is somewhat less than 150 square feet of radiating surface in the coil, and the 2-inch supply line shown is of sufficient size to supply the coil, provided the pipe is thoroughly covered so that there is no excessive condensation in it, as it extends from one building to the other. The coil is connected in a manner somewhat unusual. The supply to a mitre coil is usually connected into the manifold of the mitre section of the coil, which is then graded downward towards the opposite or return end. The air valve is placed at the return end, and one air valve is sufficient to keep the coil free of air.

Air venting and drainage are the measures to be provided for in making the connections to coils. Unless properly connected and vented the steam, when first turned into the coil, will short circuit to the air valve and close it before the pipes are free of air, and thus a portion of the coil remains air bound and cold and useless as heating surface.

Fig. 2 illustrates a good method of making the supply connection to an overhead coil. The connection is made to the mitre end of the coil and into the manifold at the

short neck of the mitre. Fig. 3 shows a method of making the return connection and illustrates the proper position of the air valve. A reducing elbow is used so that the connection to the manifold may be made without bushing. This method will allow of perfect drainage. As shown by dotted lines a tee may be used in place of the elbow, and in this event the air valve is placed in

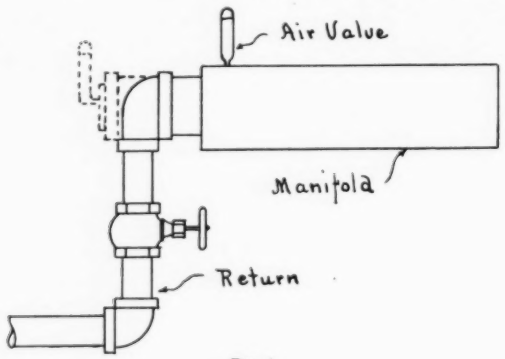


Fig. 3.

the outer end of the tee. We prefer the use of a reducing elbow.

We suggest that the 2-inch supply be given a slight downward pitch to the garage. Just inside the wall of this building connect a bleeder, which can cross the building overhead, to a point where it can drop and connect with the return from the coil at the floor line. At the point, where the supply line enters the garage, after the bleeder is connected, rise to the ceiling and extend the pipe the distance required to connect with the coil in the manner illustrated by Fig. 2. This method will provide dry steam to the coil without any interference from any condensation, which may have collected in it. There should be no trouble in maintaining a perfect circulation through the coil.

AN IMPRACTICAL STEAM HEATING SYSTEM.

Editor "Domestic Engineering:"—Enclosed herewith you will find a rough sketch of part of a steam heating system, in which the radiator is placed on the same floor as the boiler, and the radiator is to be heated by circulating water from the boiler as shown. A pipe extending

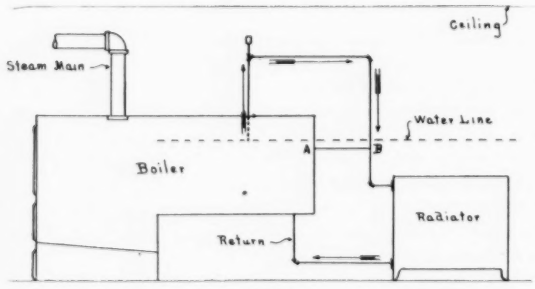


Fig. 1.

below the water line in the boiler is vented near ceiling and is to be filled under pressure. Kindly let me know if such an arrangement will give satisfaction.

Iowa. C. J. A.

The illustration, Fig. 1, is an outline of the pencil sketch submitted by correspondent.

If we have the right understanding of his question, we would advise that the work as planned is not practicable, as the water in the auxiliary hot water system will never stand at a higher level than the water in the steam boiler, and therefore there can be no circulation through the system. In other words, to completely fill the hot water system, it will be necessary to flood the steam boiler, and the steam outlet to a level as high as the top of the hot water piping.

If the bottom of the hot water supply pipe (shown by dotted line extending downward into the boiler below the water line) is connected directly to the return pipe, where it enters the boiler, the hot water system may be filled regardless of the water in the boiler, as there is no connection between the two systems. In this case the pipe passing through the steam boiler is simply an auxiliary coil or heater.

We have shown on the sketch a line marked A.....B, and suggest that the flow connection to the radiator should be made on this line, or below the water line of the steam boiler. The circulation through the radiator will be very sluggish, as there will be very little difference in specific gravity between the flow and return. No vent will be required, as the air will vent through the steam boiler. The water in the hot water system cannot be put under pressure, unless it is entirely separate from the water in the steam boiler.

A UNIQUE HEATING SYSTEM.

Editor "Domestic Engineering":—The foreman of a certain shop has some queer and thoroughly impractical ideas about steam heating. Although this is the case, it may be possible to gain information from them, and it is for this reason that I will tell readers of this department about some of his ideas.

One is the theory that, exhaust steam is useless for heating purposes. One reason for this is the fact that, when he installed a heating system, he used such small pipes for the main feeders that exhaust steam under 2 or 3 pounds pressure would not fill the radiators, hence he had to turn live steam into the system at 15 pounds pressure in order to force it through the small feeders. He was invited to inspect another heating plant, where large feeders carried steam to every part of it, when the gauge showed but two pounds pressure. Even this did not convince him, as he still claims that low pressure steam is useless. Of course the engine did not work

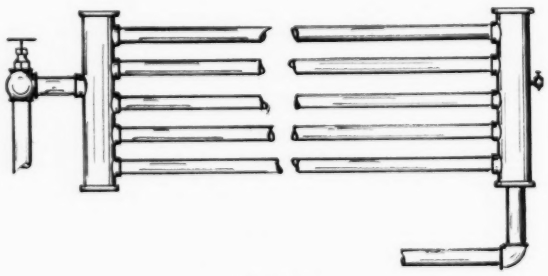


Fig. 1.

well under 15 pounds back pressure, hence it was allowed to exhaust through the roof, while live steam was used to heat the shop.

A pump and receiver was installed to take the water of condensation and return it to the boilers without releasing it from pressure, but this was condemned and taken out. A return trap was purchased but it would

not work properly, because the live steam pipe was not connected directly into the main header, but was attached to another pipe where the pressure was a few pounds less than the boiler pressure. Finally a hole was dug in the ground, and the bottom and sides were made water-tight with cement. Into this reservoir the hot water is discharged where much heat is lost because the vapor floats away. However, it is considered satisfactory, because it does not require scientific management.

In the shop he installed a very long pipe radiator made

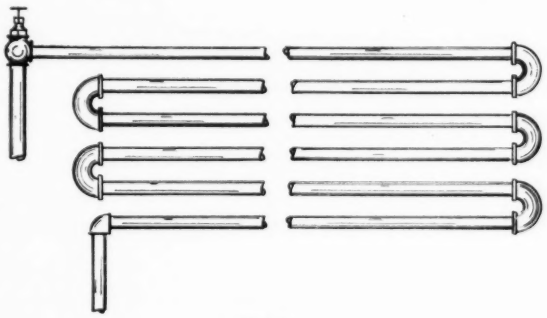


Fig. 2.

in the usual way, as illustrated in Fig. 1. In such a case an air valve should be connected to each pipe, but this was considered unnecessary. When the small air valve shown was found inadequate to dispose of the air, and some parts of the radiator remained cold accordingly, no attempt was made to provide a remedy, but the headers were broken with a hammer, and the whole scheme declared a failure.

The separate pipes were then connected into one continuous coil by means of return bends, as illustrated in Fig. 2. In this case the steam had to travel so far that it was condensed before it reached the drip, hence some of the pipes were always cool.

As this was not satisfactory the return bends were broken up, and replaced by one header as illustrated in Fig. 3. A cap was screwed on the end of each pipe, with a pet cock in it. Of course every pipe is now air bound when steam is turned into the header, until somebody

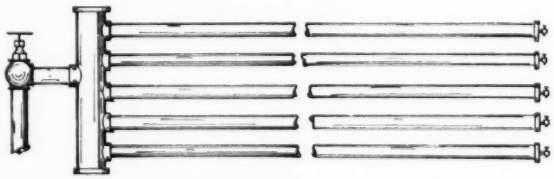


Fig. 3.

opens all of the pet cocks, waits until steam appears and then closes them. This is a nuisance, partly because they ought to be opened before anybody enters the shop in the morning. While somebody is in the boiler room in order to get up steam for the day's work it is not convenient to travel all over the shop on such errands.

An air valve in place of each pet cock would dispose of the air, automatically, but this genius does not believe in air valves, as he claims that they are "no good."

It may be well to remark that if for any special reason a radiator, that proves satisfactory in ordinary practice, is not so in a certain odd case, something should be added to make it work. If a peculiar kind is installed and is more satisfactory than the standard article, it admits of no argument, but where good current practice is ignored, and special devices are discarded, it certainly demonstrates that somebody has allowed his prejudices to obscure his judgment.

New Haven, Conn. W. H. Wakeman.

OUR JOB!—LET'S FINISH IT!

The importance of continued co-operation of the people in the matter of Government financing cannot be overestimated.

The armistice, signed with the Germans on November 11th, did not end the war. It merely meant that fighting ceased. The armies and navies of the Allies and of the United States are still actively engaged in "finishing the job." The army of occupation in the surrendered German territory, the supply units back of the army, the navy which is bringing back the troops released from foreign service—these must all be fed and clothed, and their equipment must be kept in the best of repair.

That "finishing the job" is not entirely up to the soldiers and sailors is logical and fair. In considering the situation, the civilian will see that his part in the grand finale must be the supplying of funds. Only through the continued practice of thrift—an excellent habit taught the American people by nineteen months of war—will he be able to give that hearty co-operation to his Government which is essential in these days.

The analogy between the work of installing a fire-and-war-and-murder-proof system of democracy and fairness in the world and the matter of installing a plumbing, heating or ventilating system in a building must be clearly evident to readers of "Domestic Engineering." There is an eloquent point in the simile.

No matter how good the workmanship has been in the installation of a system, no matter how much first-class and up-to-date material has been used in the construction, no matter how perfectly the engineer has applied theory and science in his plans, the efficiency of the plant will be greatly impaired, if carelessness is allowed to creep in, in the final "finishing up of the job." And, the system having been installed, the necessity of proper care and the use of proper fuel for heating is too well known to be mentioned.

The same must be—and is—true in the matter of keeping clear and unsullied the waters of freedom, which we offer to the thirsty people of the greater part of Europe. It is true in the matter of abolishing the searing heat of militarism and substituting the invigorating air of reason.

The keenest military strategists of the Allies and the United States and the most able statesmen, diplomats, political economists and religious leaders have combined to work out the plans for the great era of peace. The able-bodied, clean-minded youth of these nations have given themselves to the task of establishing law and order. The civilians have sacrificed and worked that the sinews of war should not be faulty.

Now it has come to the point when the job must be finished. Each and every patriotic American must do his share in this. The coming Liberty Loan must be oversubscribed. War Savings Stamps must be continually purchased in pursuance of the habit of thrift, which is to become a national characteristic of formerly spendthrift America.

The slogan must be: "Finish the job!"

He Passed.

Medical Officer: "Have you any organic trouble?"
Recruit: "No, sir. I ain't a bit musical."—"Tit-Bits."

RAYMORE *and* COMPANY
PLUMBING *and* HEATING
SUPPLIES

The Story of the Plumbing Contractor, Who Secured a Large Loan From His Plumbing Supply Jobber

By Daniel Louis Hanson, Author of the "Moses Irons Stories"

I.

"I CAME here in reply to this letter," said the elderly gentleman, handing the missive to Mr. Raymore.

The Boss read the communication through, then held out his hand to the visitor: "I am mighty glad to meet you, Mr. Morson, but Brillion, our credit man, is out of the city for a day or two."

"That's why I came, Mr. Raymore. I wanted to talk the matter over with you. Credit isn't always a matter of dollars and cents; sometimes there is human nature in credits."

"Why, I supposed that the human equation was always reckoned with between dealer and supply man," said Mr. Raymore, swinging his chair so as to squarely face the visitor. "Last of all would I imagine that my establishment would ignore it. What is the situation, Mr. Morson?"

"On the face of it not very good, Mr. Raymore," acknowledged the plumber from Merrill, "but at heart it is splendid. And that is the reason why I wanted to see you personally. I heard you speak in Carnegie Hall not long ago and got the impression that ice water isn't the fluid which courses through your veins."

"Thank God, no!" exclaimed the Boss. "At least not in these days. A man who can't do business with his heart as well as with his head—the two teaming evenly—isn't a business man at all, Mr. Morson."

"That's what I had concluded already. Well, as you will see from Mr. Brillion's letter, I am slightly behind in my account, but that isn't the issue at stake; what I need is a larger line of credit, and on that Mr. Brillion and I can't agree. Of course, I could go a-kiting around among other jobbers—for heaven knows there are hungry ones among you, as well as among us master shopmen, but that would only be using the one hand to wash the other with, and wouldn't increase my working capital. I can't deal with our local banker, as I had to oppose him in some of his dirty politics a few years ago, and he is only too anxious to get his claws into me. Now, I want to lay my case before you, and if you think I haven't a good proposition, I'll pay up what I owe here and take myself elsewhere."

"You are about sixty, I imagine," said Mr. Raymore.

"I'll answer that both yes and no; I am sixty-one; my son in France is twenty-eight."

The Boss got up and shook hands with his visitor: "Now, I know why you want to keep the shop open instead of locking the front door, as so many are doing," he said.

"You have guessed it," replied Morson. Then he went on and told his story.

II.

The business was an old one, the dream of Morson being that his son Harry would take it up at his majority. To that end he taught the youth both plumbing and heating, from working with the tools to the mysteries of the, then, comparatively new overhead cost system. But the young man saw a bigger field for himself in cattle raising in the West. The father waited, sure that the prodigal would return, as he did in 1916, glad that there was such a gold mine for him as a plumbing shop in Merrill, where he could earn a living for himself, wife and two-year-old child. Then came 1917, and Harry saw his duty across the sea; nor did either his father, wife or mother say "nay" to him.

The business had been a fairly prosperous one, but the cessation of new building cut in tremendously on the income, besides two families were more of a pull than one had been. Merrill with its three shops to seven thousand people proved too congested a field, and Robert Morson found it necessary to look farther. Being a man of reflection and reading, he concluded that the road to prosperity—at least a living—during the war period, lay "Back to the Farm." That is, not by wooing the soil, but by wooing the one who worked the soil.

"If I can't plant my acre, I can do the next best thing, or a better one possibly, I can make the work so much easier for the farmer and the farmer's wife, that they can raise more stuff than could have been done without my help."

"Plumbing, Heating and Lighting Fixtures on the Farm," became the slogan then of Robert Morson. That first day out, however, was an eye-opener for Morson: he found the sum total of his knowledge of domestic engineering on farms—of what should be, and how it should be installed—was very small indeed. He knew next to nothing as to what the best fixtures would be, next to nothing, of what a modern farm really was, what its requirements in the way of equipment and what it aimed to turn out. A silo was a mystery to Morson, a milking machine the invention of tomorrow.

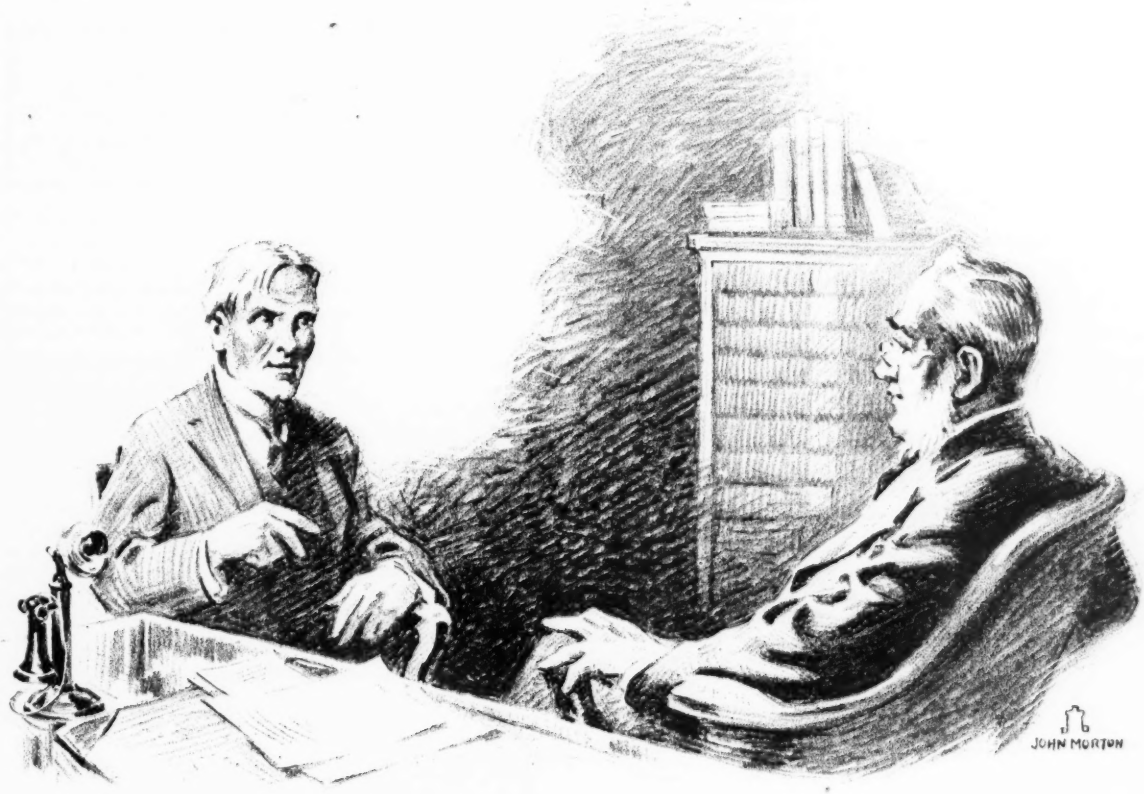
A smaller man would have bluffed his way through and have made a failure of the campaign; Morson on the contrary went down to New York City and to the public library for a list of books on his subject. Supplementing that with lists he had secured from the various trade papers, he had a working library. On top of that reading he paid visits to certain show farms in New York state and in New England, saw what was foam and what was substance in their equipments, then back in Merrill he read up and thought up.

It was a bigger field in the matter of the technical knowledge required of him; in Merrill he had needed working acquaintance with only one kind of a water system, that furnished by the city. For farm work he had to build his own system, install the hydraulic ram in the spring or brook, the deep well, the cistern. And then as distributor either the hot-air engine, the gas engine, the wind mill, the electric pump—not to say anything about the pneumatic or gravity tank, or the direct pressure from well by means of electric current from some electric company or from a storage battery.

Then sewage disposal!—of that he had nothing in Merrill, except connecting with the city system. On the farm half a dozen systems contended in rivalry.

But time was fleeting with Robert Morson; after the first week of digging in on farm engineering, he saw the trend that his advertising would have to take—a few general statements, then an emphasis on the fact that no two farms presented the same proposition; that the personal visit was necessary. Toward the river was the hill country with its many springs and rapid flowing streams; towards the east were located the larger farms on the prairies. In one section the ram, or the gravity flow was possible, and there, too, sewage disposal was quite easy. Farther east the deep well, or in lieu of that the shallow well and the auxiliary cistern at house and barn had to be relied on.

So Morson in his flivver made a farm-to-farm campaign of his zone of activity—a circle having a radius of thirty miles from Merrill. On his first visits he dropped a few seeds in the way of literature as to the "Farm With Water, Light and Heat"—he had on his staff a good electrician. But his principal function on that first round was to get enough data to lay the foundation for the more vigorous campaign of promotion. There were a few jobs so simple in nature that he picked them up on the first swing around, but the big work was left till later.



"You have guessed it," replied Morson. Then he went on and told his story.

"Plumbing, Heating and Lighting Fixtures on the Farm Are Necessities in This Period of Intensive Food Raising, and Not Luxuries," was the first slogan Morson sent out. "Help Uncle Sam by releasing every unit of man and woman power from unnecessary work, such as pumping water by hand, running the separator, the churn, the washing machine and the saw by hand power. Let the domestic engine do your work—and not you its work."

Another very effective one was: "Be the Brains of Your Farm and Leave the Drudgery to Machinery." Still another: "Let Plumbing, Heating and Lighting Fixtures Release Man Power for the Battle for Democracy."

Morson did some newspaper advertising, but that was rather as a sort or sign above his door; the intimate appeal he made through correspondence supplemented by visits. Each farm being different, each angle of approach had to be different, and Morson became an expert on

angles of approach, as well as on farm mechanics in his line.

Certainly business came. It always does, when one goes after it in the proper way. And it kept coming because farmers were quick to see that Morson had the goods to deliver—that is, something more than the mere fixtures: he gave constructive knowledge of what was best for each individual farm. He carried no standardized specifications in his pocket and fitted each farm to them. No trade fakir was Morson.

Of course, he had the women on his side. Ibsen says: "No man can be defeated who has women on his side." That certainly is true of the domestic engineering line. Women cannot reason of course—all men agree on that; but woman takes the short cut across lots and sits at the corner waiting for the reason-hampered man to arrive. So the farmer wives of Morson's bailiwick saw his solution of their since-the-world-began labor problem, long before their men folks did. Morson plus the farm wives spelled success.

But capital, capital was needed. The local bank had its grievance against Morson and would have been glad to have pulled him down under a loan. Money that otherwise would have been available was put into Government securities, where the holder had both good interest and a properly patriotic feeling added. And so the difficulty between Brillion, of Raymore & Co., and Morson arose, ending in the credit man sending an ultimatum to the Merrill plumber.

III.

Robert Morson had finished his story, of which the above is only the briefest of summaries, and had laid before Mr. Raymore the same schedule of assets and liabilities that he had submitted to Mr. Brillion. And now he put the question direct:

"Are you prepared to give me a line of five thousand dollars credit?"

Nathaniel Raymore had been doing some solid thinking, while his visitor had been talking. He saw that the man across from him was a business builder. That he was more than that—a strong constructive force on the side of the Government in its overseas struggle. Had the Morsons of the land exerted themselves during the last year as this one of Merrill, thousands of men and women would have been released to the nation's services, even a greater crop than the one 1918 gave, would have been possible.

"Mr. Morson, I don't believe that Brillion understood the situation; if he did, I should almost feel that his decision was pro-German. I suppose he looked upon you as one of the many plumbers, who of late have gone out with great hurrah to gather in farm work, and have been utterly disqualified both by experience and temperament to make good in it. Brillion didn't understand that you were enlisting all your resources, financial and technical, in this work; that you were fighting the fight as strongly here in America against Teutonism as your brave son is doing over there in France. Brillion didn't understand—for I don't believe he is pro-German—that it was Harry Morson in France plus Robert Morson in Merrill. As for that banker of yours, well a man of that nature, in one matter, is pretty apt to be twisted all along his personality. I will just take his name and eventually—well eventually!" and Mr. Raymore pulled vindictively at his portiere whiskers.

"Now, Morson, I don't believe in patching; if Brillion is to run credits, why he is going to run them, till I let him out for incapacity. Brillion had all these facts before him, and I am not going to reverse his decision—but, Mr. Morson, Brillion isn't the watch dog of my private bank book, and I am good for a loan to you at, well, at Liberty Bond rates, for this is what it really amounts to—to the extent of five thousands dollars on that showing—" pointing to the plumber's statement still lying on the desk.

"We will fix it up after lunch, which you will share with me, I hope. I am not so old, Morson, but that I can feel the blood in my veins—you are right, it isn't ice water!—flow the quicker from such an experience as you have had."

But before going out, Nathaniel Raymore wrote "Brillion" on his calendar, with a circle around the name.

January 28, 29 and 30, 1919.—The annnual meeting of the American Society of Heating and Ventilating Engineers, in Engineering Societies Building, New York.

January 28, 29 and 30, 1919.—The annual convention of the Illinois Master Plumbers' Association, at Danville, Ill., with headquarters at the Harrison Hall.

January 29, 1919.—The annual meeting of the New England Association of Plumbing Inspectors, at Quincy House, Boston.

February 11, 12 and 13, 1919.—The annual convention of the Ohio Master Plumbers' Association, at Youngstown, Ohio, with headquarters at the Ohio Hotel.

February 12, 1919.—The winter meeting of the Eastern Supply Association, at the Hotel Astor, New York City.

March 10, 11 and 12, 1919.—The annual convention of the Indiana Society of Sanitary Engineers, at Terre Haute, Ind.

March 10 and 11, 1919.—The annual convention of the Missouri State Association of Master Plumbers, at Hannibal, Mo., with headquarters at the Mark Twain Hotel.

BEN FRANKLIN'S THRIFTOGRAMS.

Save and have.

Every little makes a mickle.

Little strokes fell great oaks.

A rolling stone gathers no moss.

God helps those that help themselves.

Spend one penny less than thy clear gains.

Look before or you'll find yourself behind.

The way to wealth is as short as the way to market.

He that waits upon fortune is never sure of a dinner.

Money can beget money, and its offspring can beget more.

It is foolish to lay out money in a purchase of repentance.

Learning is to the studious and riches to the careful.

Waste neither time nor money, but make the best use of both.

Remember that money is of the prolific, generating nature.

All things are cheap to the saving, dear to the wasteful.

If you would be wealthy, think of saving as well as getting.

Beware of small expenses; a small leak will sink a great ship.

A penny saved is a twopence clear. A pin a day is a groat a year.

Gain may be temporary and uncertain, but expense is constant and certain.

Buy what thou hast no need of, and ere long thou shalt sell thy necessaries.

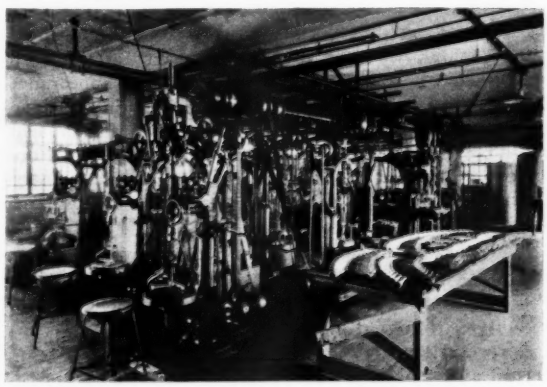
By Their Works Ye Shall Know Them

The Plumbing Industries Did Noble Work During the War and Are Planning Enlarged Future Activities

IT may never be said that American manufacturers did anything less than their full duty in helping to win the war. Neither may it be said they did not understand the full meaning of the consequences of the outcome of the war. Their works shall make them known. Where money was needed they aided to their utmost limits, and they gave freely of their employes' time where it was thought they might be helpful in the various campaigns to aid the military forces. Where their factories were needed, they were converted gladly to government uses, and the personnel of the organizations were likewise turned into government workers, if needed. If factories needed to be increased in size to care for government work, that was done cheerfully, and any losses due to this war work and to its sudden ending has also been taken as a matter of course.

With the closing of the war, many factories have remaining, increased works with increased facilities that are unnecessary to meet their peace time demands. This will mean a loss to them as well as any loss due to giving up domestic trade to care for government orders. It is obviously impracticable to distribute war orders and war losses among all manufacturers. Yet since the undertaking has been to aid the military activities of the nation on its call for help it would be but a matter of common justice for the Federal Government to equalize and distribute losses among those who profited from its contracts, or for the Federal Government itself to assume these losses as a part of its war debt.

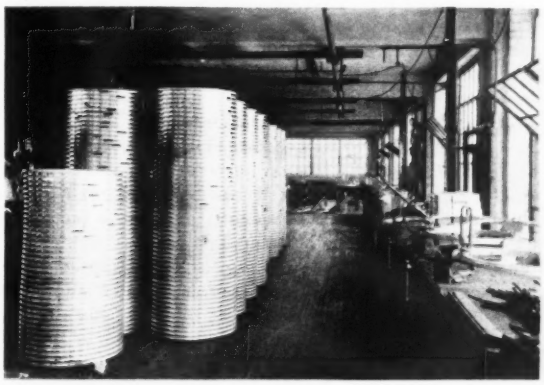
Along with all other industries, factories producing plumbing and heating goods and kindred lines have freely aided



Special Drill Equipment for the Manufacture of Munition in the Plant of the Wolverine Brass Works, Grand Rapids, Mich.

the government wherever possible. We have the enviable records of many of these who contributed their product directly or indirectly to war work, manufacturing directly for the use of the armies and navy, or putting out goods for the necessary aid of other factories that were engaging every ounce of their energies on production of war materials. The trade can well be proud of the aid given by the factories in their line, whose work or product was required by the war department.

It is interesting to note the many varied requirements made upon factories of the plumbing and heating industries, and honor is due them for their unselfish interest in responding to



Equipment for Manufacture of Gun Mounts in the Plant of the Wolverine Brass Works, Grand Rapids, Mich.

all demands. Lack of space prevents the giving of data and other facts in this connection. However, to give an illustration of this work, one concern manufacturing plumbing specialties of a high grade, devoted eighty per cent of their equipment to the manufacture of flexible ring gun mounts, special parts for air speed indicators, and such, for the Aircraft Production Bureau of the United States army. It will be gratifying to the trade to know that in the change from the production of plumbing supplies to the manufacture of special aircraft material, including an increase of factory capacity of about fifty per cent, they were able to give prompt, effective and satisfactory service.

Now that the war is ended these factories are being readjusted and put in ship-shape for a renewal of their activities in the plumbing and heating world. Some are seeking additional territory for their output, while others are adding other departments for the output of additional kindred wares to absorb their increased capacity for manufacturing. Some of the factories are barely able to keep up with their domestic demands, perhaps due to the relinquishment of the trade in the field of other firms, which have been engaged on governmental war orders. However, with the closing of orders given for army needs, and with increased manufacturing capacity and facilities, it is believed the trade will be adequately supplied with better products and better service in addition to the caring for an ever-increasing export demand for the products of these industries.

WHEN A CHECK IS A RECEIPT.

By Ralph H. Butz.

Written Expressly for "Domestic Engineering."*

There is a large number of business men, who do not request receipts when they pay their bills, thinking that because all bills are paid with checks, the cancelled checks alone will serve as valid receipts and be sufficient evidence that the bills have been paid. Of course, a check is a valid receipt, providing that it is written in such a manner as to satisfy the legal requirements for this purpose. But the business man is usually very positive that under no circumstances can he be compelled to pay a bill twice, because he can at any time produce the checks with the payee's endorsement thereon. However, the fact remains that more than once have business men been compelled to pay bills twice, even though they did pay by check, although it was through their own negligence that this happened and that the checks did not serve as receipts for the payments which they claimed.

The fallacy of the idea that a check is always a receipt for the payment of a bill or as payment on account, when there is nothing written on the check to show for what it was issued, was very well illustrated in a case brought before one of the higher courts.

According to the evidence produced in the case, a man named Robbins purchased goods quite frequently from the Thyrex Company. He did business with this firm for several years, making all payments by check, and never bothering about receipts. Frequently he went to the office of the Thyrex Company to purchase goods, and at the same time gave his check in payment for the goods purchased. This was considered to be a cash transaction. At other times he had checks cashed at the Company's office, which was merely an accommodation accorded to him as a customer.

One day he received a statement from the Thyrex Company, together with a letter requesting payment of a $100 balance long overdue. He immediately wrote a letter in reply, stating that he was not indebted to the Thyrex Company, and placing emphasis on the fact that he had all his cancelled checks on file, and could produce these as receipts. The Thyrex Company later mailed Robbins an itemized statement, and also made further requests for settlement of the account. He gave the matter no further attention, claiming that he had paid for everything, he had ever purchased from them, and feeling secure that with his checks as receipts he could never be forced to pay their claim.

Finally, the Thyrex Company started suit, and at the trial Robbins produced the checks as evidence of the payment of the account. However, much to his astonishment, the Court upheld the claim of the Thyrex Company, saying:

"Nothing appears, either on the checks or the stubs, to indicate for what purpose the checks were given. Neither appellee nor appellant testified definitely to what transactions the checks relate. The Court has read the evidence carefully and could not say, with any degree of certainty, that either of the checks should have been credited to the account. In fact, there are many circumstances in the record indicating that they had reference to independent transactions. It is urged insistently that the burden of proof is upon the appellee to show what application was made of the funds derived from the checks in question; that having received and cashed the checks the burden of proof is upon them. But the burden of proof is upon the debtor to maintain his plea of payment. Unless the checks show upon their face for what purpose they were given, or there is some other positive evidence as to the transaction, to which the checks were referable, we think the burden continues upon the party pleading payment to show that the checks were given in payment of account. The checks in this instance being referable, under the conflicting testimony, to either the account or the independent transactions, we cannot find, by a preponderance of the evidence, that the checks were given in payment of the account."

Of course, Robbins had to pay the $100, and according to his claim pay it twice. Still, if he had exercised ordinary care, either requesting a receipt for each payment, or marking on each check for what it was given, he would have been safe.

The simplest method for the business man to protect himself when making payment by check is to write on the face of the check the date and amount of the invoice in payment of which it is given, or if it is given as payment on account it is merely necessary to write the words, "on account."

Rubber stamps to facilitate this work can be purchased for a very small sum, and they are very convenient. These rubber stamps are usually of the following form:

This check is in payment of the
following listed invoices:
Date Amount
Date Amount
Date Amount

With such protection there is little probability that the man who pays by check will be called upon to pay any invoices the second time, or that he will become the defendant in a lawsuit for this purpose.

*Copyright by Ralph H. Butz.

THE RETRAINING AND REPLACEMENT IN INDUSTRY OF DISABLED SOLDIERS AND SAILORS.

On its surface the chief purpose of the Smith-Sears Vocational Rehabilitation Act appears to be merely trade training. But, whoever examines the act carefully will find greater possibilities than this surface appearance. First, it will be found that education is the principal function of the law, and next, it will be disclosed that the education outlined is education of a different quality than that heretofore commonly understood as education, says Charles H. Winslow, chief of the Division of Research, Washington, D. C.

The education required by the act is a type of education which goes to the heart of democracy—such an education which will bring more opportunities and greater mobility.

A careful analysis of the law will show that its sole purpose is freedom.

Let us pause a moment to consider what we mean by freedom.

The word "freedom" covers at least four phases: Religious freedom, political freedom, social freedom, industrial freedom. After centuries of struggle, a limited degree of freedom has been obtained for freer religious conviction, political action, and social selection.

But little headway has been made in behalf of industrial

freedom, and yet this last is the fundamental base of all freedom.

What small advance had been made by civilization was irksome to the junkers and overlords of Prussia, they sought to crush what little economic freedom that did exist in the world and compel all men everywhere to submit to their dictation.

If the Germans had won, industrial slavery would have been the lot of all men in all lands, for an indefinite period.

In the days of reconstruction now before the American people, our defenders who have been disabled in the cause of industrial liberty must be and will be our chief concern.

These men must be so trained and so educated that they will be free to come, go, select or act in the employment they have chosen. Self employment, one of the great ideals of democracy will be advised whenever and wherever possible. In such cases where that is not advisable, then our comrades shall be so completely trained in and for a going trade, industry, or occupation that will insure for them the greatest possible measure of industrial freedom.

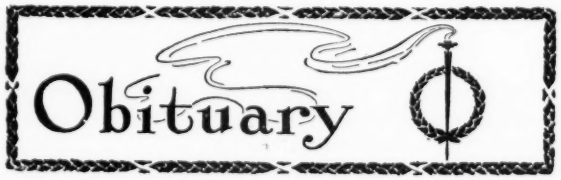
With this great work set in motion, and with successful operation, it will be easy to take the next step for the freedom of many thousands now subjected to economic freedom in various industries and various sections of our country.

There is great danger ahead if we allow any one man or set of men the opportunity to dictate how another man shall work, how much he shall do, how much he shall be paid, when he shall work, when he shall not work and how long he shall work.

The Smith-Sears Act will, in a large measure, remove this grave industrial menace.

The men and women connected with the organized labor movement in the United States thoroughly understand the human problem of retraining the disabled soldiers and sailors.

They can be depended upon to make them welcome in the shops, mills and mines, upon the railroads and in every other vocation which they may select for their life work, and they will do their utmost to help them become efficient in the full meaning of that popular expression.



Clarence A. Cook.

Clarence A. Cook, president of the Taunton & New Bedford Copper Co., of New Bedford, Mass., died at his home in that city on New Year's Day, in his 64th year.

George Patterson.

George Patterson, a plumbing contractor of Sacramento, Cal., died at his home in that city a few days ago of heart trouble in his 56th year. His wife and seven children survive him.

George H. Green.

George H. Green, a plumbing contractor of Evansville, Ind., died recently at his home in that city of influenza followed by pneumonia. He had been engaged in the plumbing business in Evansville since 1905. His wife and his mother survive him.

Charles O. Emery.

Charles O. Emery, former sheriff of York County, Maine, and a master plumber at Sanford, died at his home in that city recently. He was 65 years of age and previous to his retirement, a few years ago, because of ill health, was in the plumbing business for four years.

John H. Birchall.

John H. Birchall, a well-known old-time master plumber of Allentown, Pa., died last month at his home in that city, following several months' illness, in his 77th year. Mr. Birchall took a very active interest in association matters, and he was for many years treasurer of the Pennsylvania Master Plumbers' Association.

George H. Devol.

George H. Devol, a retired master plumber of New Albany, Ind., died recently at his home in that city, in his 81st year. Mr. Devol had been connected with the plumbing and stove business 58 years, having succeeded his father, H. N. Devol, a pioneer plumber. He retired from business about eight years ago, on account of poor health.

Sergeant Mark J. O'Connell.

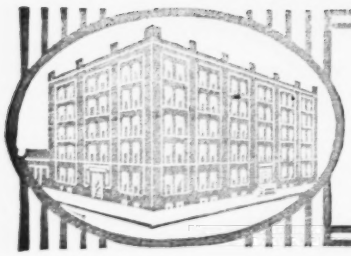
Sergeant Mark J. O'Connell, who was connected with the main office of the Standard Sanitary Manufacturing Co., of Pittsburgh, Pa., for more than fourteen years, died in France of wounds received in action a short time before the signing of the armistice, according to official notice received from Washington last week. Before leaving for service in the army, a dinner party was arranged for him by the late Vice-President F. J. Torrance, on which occasion he was presented with a watch as a token of the esteem of his associates in the Standard company. His wife survives him.

William Wallace.

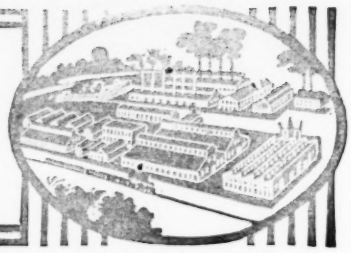
William Wallace, one of the pioneer plumbers, bankers and manufacturers at Lafayette, Ind., died at his home in that city on Wednesday morning, January 8th, in his 77th year, after an illness lasting more than a year. For more than forty-six years he was at the head of the Lafayette Gas Co., and for nearly a half a century had been vice-president of the Lafayette Loan and Trust Co. Mr. Wallace was at the head of the Wallace Bros.' plumbing and heating establishment; first vice-president of the new First Merchants National Bank; head of the Wallace Foundry and Machine Co., and at the head of an industry at Dale, Ind. He was a native of Scotland and went to Lafayette after he had lived for a while at Cincinnati and Fort Wayne. He served in the civil war in the Benton cadets, an independent organization under General Fremont. His widow and five children survive him.

W. J. Daly.

W. J. Daly, president of the W. J. Daly Plumbing Co., of Mason City, Iowa, died recently at his home in that city. Mr. Daly was one of the best liked men in his city, and the "Mason City Globe" gave expression to the high esteem in which he was held by his fellow citizens in the following tribute: "Almost everyone in the city knew 'Bill' and, what is more important, they were all glad to know him. He never came but with a smile and with real good fellowship, and he never failed to raise a smile and a feeling of good fellowship in everyone he met. As he passed up and down the streets, 'Hello, Bill' was heard on every hand, and scores would stop him often with nothing whatever to say, but just to be talked to by 'Bill.' If a kindlier heart or a truer friend has ever lived in Mason City, that heart and that friend has gone undiscovered through all the years."



Among the Wholesalers and Manufacturers



DATE FIXED FOR WINTER MEETING OF EASTERN SUPPLY ASSOCIATION.

The winter meeting of the Eastern Supply Association will be held at the Hotel Astor, New York City, on Wednesday, February 12th. In making this announcement Secretary Frank S. Hanley says that matters of the deepest interest to the membership will come up for consideration at all sessions, and he promises there will be no idle moments. He also cautions that reservations be made as early in advance as possible, as the city will be crowded that week.

NEW YORK JOBBERS ADOPT NEW TERMS OF SALE.

The jobbers of plumbing supplies of New York City at a recent meeting adopted the following terms of sale, dating from December 1, 1918: "Terms, 2 per cent cash discount, if paid within ten days from date of invoice, or thirty days net."

HUDSON BOILER MFG. CO.'S ANNUAL MEETING.

The Hudson Boiler Manufacturing Co., of New York City, held its annual meeting on Monday, January 6th, at which time the officers of the company were re-elected. They are: Howard T. Gates, president; B. F. Lane, secretary; J. M. Ellis, treasurer, and J. Jacobs, assistant treasurer. President Gates reported that a prosperous year had been enjoyed by the company in spite of the world conflict, and later in commenting on the situation said that, while a temporary lull is to be expected for the next few months, he is confident that a healthy business will be forthcoming during 1919.

CENTRAL SUPPLY CO'S SALESMEN IN ANNUAL CONVENTION.

The Central Supply Co., of Minneapolis, Minn., held its annual salesmen's convention from January 6th to 13th, inclusive, President P. J. Frey presided at all business sessions, of which three were held each day. An exceptionally enjoyable feature of the convention was the annual banquet which was held on Thursday night, January 9th. Among the out-of-town supply men and manufacturers who attended the banquet and some of the sessions were the following, who also delivered interesting addresses and speeches: Jos. F. Carroll, of the Standard Sanitary Manufacturing Co., Chicago; H. S. Maddock and Wm. Devine, both of the Thos. Maddock's Sons Co., Trenton, N. J.; Harry E. Speakman, of Speakman Co., Wilmington, Del.; B. O. Tilden, of American Sanitary Works, Trenton, N. J.; A. S. Lindeblad, of the Hoffman Specialty Co., Chicago; Harry G. Agness, of the Chicago Faucet Co., Chicago; Charles Green, of Borden Co., Warren, O.; T. R. Burke, of Sloan Valve Co., Chicago; and C. Allison, of the Duplex Mfg. & Fdry. Co., Elyria, O.

IN MEMORIAM—FRANCIS J. TORRANCE.

By Jos. F. Evans, President of the Eastern Supply Association.

Death's latest invasion into the ranks of the membership of the Eastern Supply Association has claimed indeed a beloved man.

In the early autumn of his career his demise and the sorrow that flows from it well nigh overwhelms those who knew him best.

Bound by the ties of association work for more than sixteen years—bound by those ties of deepest friendship that knew no break, I would be derelict in my duty to his memory if I did not on this occasion voice my estimate of this pure clean honorable business man and associate. No more loyal or devoted friend lived than he—no one ever doubted his loyalty. No one ever asked for his aid or advice to have it denied or was obliged to appeal to his sympathy or his charity, because to state a need was to receive it.

It has been said that "Life is a narrow vale between the cold and barren peaks of two eternities." If this be an apt comparison, Francis J. Torrance traveled well and honorably that vale.

Francis J. Torrance was a manly man and to truly and fully estimate his worth *would rob language of all its tributes and call virtue by all her names.*

In business Mr. Torrance was keen, clever, courageous, but at all times fair. Socially he had no superiors as an entertainer, and yet he never forgot to practise the high ideals that he, by his life, always exemplified.

But, he is gone, and like the rose that withers in the early spring and dies before its appointed time, Francis J. Torrance will be long remembered for the gentle fragrance which the memory of his sweet nature leaves with us.

May his soul rest in peace.

THE ANNUAL MEETING OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

The annual meeting of the American Society of Heating and Ventilating Engineers, which is to be held in New York City, on January 28th, 29th and 30th, will be notable not only for the celebration of peace, but also as a celebration of the passing of an important epoch in the development of the society. The society has not only reached an important goal toward which it has been striving for years, the establishment of the long-sought-for research bureau, but is also rapidly approaching the 1,000 mark in membership, which it is expected will be passed before the annual meeting. The present drive that is being made by the Committee on Research Bureau for the solicitation of funds, has brought with it great activity in all parts of the country, and has resulted in the addition of two new local chapters, one at St. Louis, Mo., which is called the St. Louis Chapter, and another at Buffalo, which

is named Western New York Chapter. The attendant result of the development of the membership has brought in 73 applications for membership, which are now before the Membership Committee for action, and many more are arriving daily.

Every member of the society is strongly urged to take advantage of this opportunity to be present at a meeting, where the unusual opportunity will be given of hearing of the details of the proposed research bureau and of also participating in the reconstruction program of the society. There will be several important sessions at the meeting, among which may be named a Mechanical Ventilation Session, a session on Boiler Testing Code, and a session on Automatic Temperature Control. Eleven papers of unusual importance are scheduled, and the technical features of the meeting will be of greater value to the membership than ever before. The members are urged to bring their ladies and guests, wherever possible, as the usual entertainment will not be lacking.

The program follows herewith in full:

First Session, Tuesday, January 28, 2:00 p. m.

Business Session: Announcement of a quorum.

Appointment of the tellers of annual election.

Address of the president.

Reports of the council, secretary and treasurer.

Reports of committees.

Unfinished business.

Report of tellers of annual election.

Second Session, Tuesday, January 28, 8:00 p. m.

Professional Session: Experiments in Air Conditioning the House, paper by E. R. Hayhurst, M. D.

The Argument Concerning Mechanical and Natural Ventilation, paper by Dr. E. Vernon Hill.

The Use of Air Washing and Humidification in Our School Buildings, paper by Perry West.

Third Session, Wednesday, January 29, 2:00 p. m.

Professional Session: Air Duct Design, paper by Leo Kraft.

Arrangement of Heating Pipes, an Important Factor in Decay of Factory Roofs, paper by F. J. Hoxie.

Dust Determinations in Air and Gases, paper by E. R. Knowles.

Fourth Session, Wednesday, January 29, 8:00 p. m.

Professional Session: Hearing on Code for Testing Low-Pressure Heating Boilers.

Fifth Session, Thursday, January 30, 10:00 a. m.

Temperature Control Session: Fuel Conservation by Means of Automatic Temperature Regulation, paper by F. A. DeBoos.

Report of Committee on Automatic Heat Control.

A Test of the Conductivity of Window Shades, paper by John R. Allen.

Sixth Session, Thursday, January 30, 2:00 p. m.

Professional Session: Limiting the Fuel for Domestic Heating, paper by Konrad Meier.

Engineer Economics of Heating, paper by M. W. Ehrlich.

By-Product Coke, paper by William T. Harms.

THE JANUARY MEETING OF THE ILLINOIS CHAPTER OF THE A. S. H. & V. E.

The Illinois Chapter of the American Society of Heating & Ventilating Engineers held its regular monthly meeting in the rooms of the Western Society of Engineers in the Monadnock Building, Chicago, on Tuesday evening, January 14th.

The meeting was called to order by President G. W. Hubbard at 7:30 o'clock, after which Secretary A. E. Stacey, Jr., called the roll which showed an exceptionally large attendance. The minutes of the December meeting were then read and approved.

H. M. Hart, Chairman of the Committee for Securing Funds for the Establishment of a Research Bureau at Pittsburgh, was called upon for a report. He started by saying that his committee had made no formal report but that he was glad to state that they had received a large number of pledges running from $25 to $1,000, and he added that it gave him much pleasure to say that he had just received a letter from the president of the parent society stating that the establishment of a Research Bureau was now an assured fact.

Treasurer August Kehm at this point reported on the financial condition of the chapter, which is in a healthy state.

Upon George Mehring's request, President Hubbard gave him the floor. Mr. Mehring delivered an eloquent speech lauding the work of Mr. Stacey in the capacity of secretary of the Chapter, an office he has held for several years, rendering efficient service and earning the esteem of all the members of the Chapter. As a token of the Chapter's appreciation of his services, Mr. Mehring thereupon presented him with an exceedingly exquisite diamond ring. Although the presentation was an absolute surprise to Mr. Stacey, he delivered a well-worded acknowledgment of the gift thanking the members for the honor.

As chairman of the Committee on Securing new Members, J. C. Hornung reported great progress, having received applications from thirty-five candidates for membership. E. J. Claffy increased this number by handing in six applications at his point.

President G. W. Hubbard then read an exceedingly interesting paper on "Engineering Features of the United States Powder Plant at Nitro, W. Va.", the largest plant of its kind in the world, describing its mechanical equipment, especially the points of interest to heating and ventilating engineers. At the conclusion of the reading of this paper, Mr. Hubbard was heartily applauded.

August Kehm thereupon told about some experiences he had recently had with fire box boilers covered with asbestos in comparison with other experiences with boilers of this type set in brick. This created an interesting discussion in which George Mehring, S. R. Lewis, H. M. Hart and others participated. In order to cover this question thoroughly, it was recommended that a committee of three be appointed to prepare a discussion of this topic for a meeting later in the season.

Adjournment was then taken.

Members and guests to the number of about sixty were in attendance, among the members being the following: H. D. Allen, W. H. Chenoweth, Jr., J. E. Chubb, E. F. Claffey, W. B. Graves, H. M. Hart, J. C. Hornung, G. W. Hubbard, F. W. Lamb, H. R. Linn, G. Mehring, J. E. Miller, C. F. Newport, J. D. Small, A. E. Stacey, Jr., and H. G. Thomas.

NEW CONSTRUCTION WORK.

Among the contracts let for construction during the past week, as reported to the "American Contractor," were the following:

Private Construction.

$175,000 factory, Chicago, Ill., O'Mallery Beare Valve Co.

$400,000 market and office building, Chicago, Ill., Morris & Co.

$125,000 factory and warehouse, Des Moines, Iowa, Advance-Rumley Thresher Co.

Y. M. C. A. Building, Mariners Harbor, S. I., N. Y.

$150,000 grain elevator, Sioux City, Iowa, Mariner Terminal Elevator Co.

$150,000 roundhouse, Louisville, Ky., Louisville & Nashville R. R.

$135,000 store and office building, Okmulgee, Okla., Mrs. Nellie Kimbley.

$100,000 bank, Lowell, Mass., Merrimack River Savings Bank.

$125,000 office building, Detroit, Mich., Aluminum Castings Co.

Plans are being drawn for the following:

$90,000 apartment house, New York City.

$225,000 hotel, Stark, O., Pennsylvania Railroad.

$170,000 moving picture theater, Henry Seigel, Albany, N. Y.

$350,000 pier freight warehouse and office, Cleveland, O., Detroit & Cleveland Navigation Co.

$800,000 sanitarium, Chicago, Ill., Columbus Hospital.

$250,000 vaudeville and moving picture theater and ten stores, Baltimore, Md., John T. Anderson.

$300,000 hospital, Louisville, Ky., Baptist Hospital Association.

$100,000 bank, Louisville, Ky., National Bank of Commerce.

$300,000 bank and office building, Chicago, Ill., Merchants' National Bank.

The following projects are contemplated:

$400,000 Masonic hospital, New York, N. Y., Masonic Lodge F. & A. M.

Government Work.

$100,000 postoffice building, St. Johnsbury, Vt.

State and Municipal Work.

$100,000 school No. 15, Rochester, N. Y., Board of Education.

$200,000 hospital, Philadelphia, babies' hospital.

$200,000 college, St. Louis, Mo., Christian Brothers College.

$50,000 to $100,000 tuberculosis sanitarium, Janesville, Wis., Rock County Board of Supervisors.

$120,000, five hospital buildings, Verona, N. J., Board of Managers of Essex County Tuberculosis Hospital.

$500,000 public school No. 13, Broklyn, N. Y., Board of Education.

$100,000 high school, Toledo, O., Board of Education.

$125,000 memorial library, Culver, Ind., Culver Military Academy.

$120,000 school annex, Detroit, Mich., Board of Education.

$250,000 Keating School, Detroit, Mich., Board of Education.

THE REBUILDING OF EUROPE, THE OPEN FOREIGN MARKETS AND CONSTRUCTION WORK AT HOME TO KEEP EVERYBODY BUSY.

Assistant Secretary of Labor Louis F. Post has just issued an official statement to the effect that the Department of Labor does not look forward to any unemployment crisis. There is no reason why either business men or wage-earners should be apprehensive with regard to commercial stagnation. The war has on the whole increased the purchasing power of the masses and has created new markets. America must assist in the rebuilding of Europe, and avenues for foreign trade hitherto closed to us are now open. Raw materials which were denied to private and non-essential industry during the war are now accessible to the manufacturers of America through their release by the War Industries Board. Credits which were similarly denied to private concerns because they were needed for government use have also been released by the Capital Issues Committee. There is no reason for anyone to be alarmed over the future.

We must remember, however, that we have large numbers of men under arms, who must be transferred to industry as rapidly as possible, and that this number is many times larger than that which we have been accustomed to absorbing. Industries can not be resumed over night. Consequently there will be for some months to come the necessity for providing some form of employment for our demobilized soldiers and war workers, pending the resumption of normal activities. There are two ways in which this can be done. One is through the continuance of the manufacture of munitions and other supplies designed primarily for war purposes which are now unecessary by reason of the signing of the armistice. The department is opposed to this course. It is simply a waste of intelligence, energy and material. It is foolish to create work solely for the purpose of giving employment to someone. The alternative to this wasteful practice is to stimulate work which is valuable for peace time purposes. Many municipalities throughout the country, and many states as well, have during the war either abandoned or suspended considerable amounts of public improvements. The Federal Government itself has practically abandoned its building program for the past two years. This accumulation of work should be undertaken at once as a means of providing buffer employment to carry us beyond the transition period and take up such unemployment slack as may result not so much from the inability of the industries to eventually absorb demobilized soldiers and war workers as to the rapidity with which they will be required to absorb them.

STIMULATE MATERIAL PRODUCTION IN ENGLAND.

Recommendations for increasing the production of building material in Great Britain during the reconstruction period are summarized as follows in a recent report of the Royal Commission on Housing:

Priority of release upon demobilization for the professions and trades concerned in the building industry.

Release at the earliest possible date, well in advance of the commencement of demobilization, of pivotal men required for the production of materials.

Immediate provision of labor to get and prepare earth during the ensuing winter for the making of stock bricks, so as not to miss manufacture in 1919.

Immediate facilities for repairs, renewals and restoration of works.

The release from Government occupation, at the earliest possible moment, of brick yards and premises now occupied for storage, etc., in order to allow of preparation and equipment for early resumption of brick making operations.

The securing of adequate supplies of fuel and raw materials.

The scrapping of inefficient plants and the introduction of more modern appliances and increased use of machinery.

ADJUSTMENT OF BUSINESS CONDITIONS IN CANADA.

United States Consul Felix S. S. Johnson, of Kingston, Ontario, reports that the effect of peace on Canadian trade may be described as follows: Those in touch with the commercial life of the country do not look for any

serious disturbance. While trade in some lines will be quieter because of the cutting off of war orders, there will be an increased demand in many others just as soon as supplies are available. Millions of tons of steel which have been held for war purposes will now be available for other purposes. Two of the first industries to benefit by this will be automobiles and agricultural implements; manufacturers in these lines are far behind in their orders. A large demand for building material is assured, and as soon as help is available many projects will be started. Men who have been working in munition plants will find employment in factories, on the farms, and on the railways. A reduction in the high wage of the war will follow, but there will be plenty of work in Canada for all at a good wage.

Manufacturers do not look for prices to drop in many lines for a long time, and merchants express the same views. Some Canadian manufacturers state that they already have orders on hand that will keep them working for two years. The problem is to get the men and material. Merchants, in general, are looking forward to a period of steady business.

Personal Mention

H. S. Maddock, sales manager of the Thos. Maddock's Sons Co., of Trenton, N. J., was in Chicago this week.

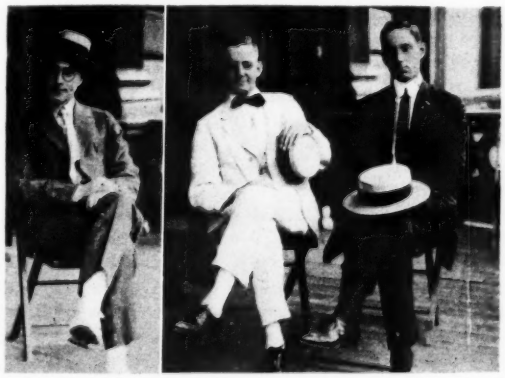
Lou Brennan, president of the Victor Brass Mfg. Co., of Cleveland, is making a short business trip through the West.

Edward F. Niedecken, vice-president of the Hoffmann & Billings Manufacturing Co., of Milwaukee, Wis., was in Chicago this week.

B. O. Tilden, president of the American Sanitary Works, of Trenton, N. J., passed through Chicago early this week on his return from a trip to Minneapolis.

Fred J. Reed, who has been associated with the Hays Mfg. Co., of Erie, Pa., for a number of years, has been appointed central western representative of this company.

Harry E. Speakman, secretary and treasurer of the Speakman Co., of Wilmington, Del., passed through Chicago this week on his return from the Great Northwest.



Louis J. Stern, Chief Chemist for X Laboratories, Boston, Mass.; C. B. Irish, Manager of Promotion Dept., Leader Iron Works, Decatur, Ill., and Ralph F. Kelley, President of the L. B. Brass Co., Peabody, Mass.—From "Domestic Engineering" Photo, taken at the St. Louis Convention of the National Association of Master Plumbers.

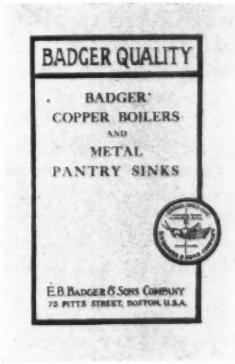
Chas. S. Hopkins, formerly connected with Evans-Almirall Co., and more recently with Richardson & Boynton Co., both of New York City, has just become associated with the American Pressweld Radiator Corporation of Detroit, Mich., in the capacity of consulting engineer.

A. M. Maddock, president of the Thos. Maddock's Sons Co., of Trenton, N. J., sailed last week for Cuba, where he will spend several weeks. From there it is his intention to visit Central and South American countries, partly in the interest of his company's export business, it being his intention to combine business with pleasure on the entire trip.

C. H. Young, formerly manager of the Chicago branch of the Burnett-Larsh Manufacturing Co., of Dayton, O., has just joined the sales force of the Fort Wayne Engineering & Manufacturing Co., of Fort Wayne, Ind. He will have charge of the Illinois, Iowa and Missouri territory and will make his headquarters at 231 Insurance Exchange Building, Chicago.

F. E. Swan has resigned from his position as manager of the New York office of the Kewanee Private Utilities Co., of Kewanee, Ill., to accept a position with the Burnett-Larsh Sales Co., of New York City, a subsidiary to the Burnett-Larsh Manufacturing Co., of Dayton, O. Mr. Swan will cover the Pennsylvania territory in his new position. He has been identified with the Kewanee company for more than eleven years and is thus well posted in his chosen vocation.

TRADE LITERATURE.

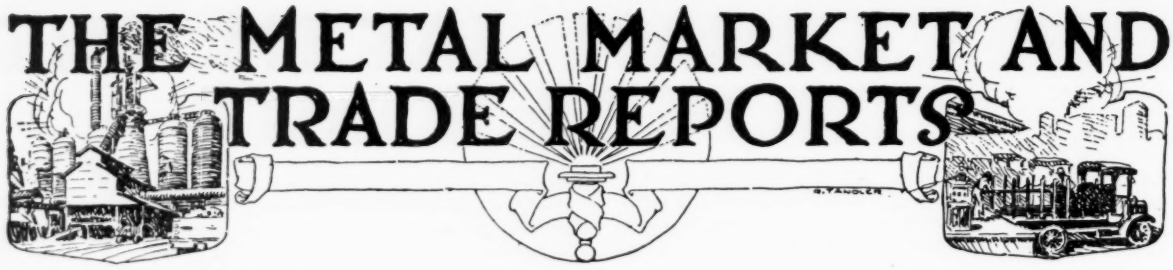


E. B. Badger & Sons Co., of Boston, Mass., has just issued a new catalogue, the front cover of which is shown in miniature. This catalogue illustrates and describes in detail the company's copper boilers and metal pantry sinks, and it also contains illustrations of a large number of residences, country homes, colleges, hotels and office buildings in which these fixtures have been installed. The book is printed on highly glazed paper and only high-grade half-tone engravings have been used in its production.

METHODS OF PREVENTING DAMAGE BY ELECTROLYSIS.

Various methods of preventing damage by electrolysis to gas and water systems, lead-covered cables, and other metallic subsurface structures are explained in a bulletin announced by the Bureau of Standards, Department of Commerce. Damage of this kind is caused by stray currents from street railways and is a constant source of worry and expense in the larger cities. It is said that no completely satisfactory method of preventing damage by electrolysis has been devised, but the investigations upon which the report of the bureau is based indicate the more effective methods of dealing with the problem. The bulletin is the second edition of "Electrolysis and Its Mitigation," No. 52 of the Technologic Papers of the Bureau of Standards. It is one of a series that is being issued on this subject. Copies may be purchased at 35 cents each, from the Superintendent of Documents, Government Printing Office, Washington, D. C.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

Steel interests report the situation as gradually improving, and the feeling in the trade is that as soon as a more settled tone prevails, buying will increase. More interest is being shown by industries dependent on steel mills, and there is some demand for certain grades of steel for immediate use. Reports of large foreign business are prevalent but a waiting disposition prevails because of the uncertainty of policy. Plates and shapes have so far given the greatest evidence of being desirable to foreign buyers. The new price schedule is making better progress in the vicinity of New York than in other sections of the country, but the opinion is general that the present schedules are for a short time only, and that further reductions may be looked for as the labor problem adjusts itself. The automobile concerns, which were commandeered during the war for the purpose of making army trucks and air-plane motors, are resuming normal production on a peace basis, and the demand for employees has remained fairly steady. A new circular was issued this week showing a reduction of 10 cents a pound in the products of the high speed tool manufacturers, making the quotation $1.90 a pound.

The iron industry is proceeding slowly. There appears to be but little talk now about pig iron at $31 per ton, especially in the South, where activity seems to be the greatest. High cost producers are set against any reduction and with an increase in production a stronger tone may develop! Furnaces in the South are booked up for the entire first half of the year. The tendency to reduce prices in some sections, however, is noted, and one large producer in Cleveland is revising prices on unfilled tonnage, but many large sellers have not decided to follow this policy except in rare cases, and a compromise frequently adopted is to extend the time of deliveries instead of granting cancellations or price revisions. The total output of pig iron during 1918 was 38,506,249 tons. The following prices are current at tidewater:

No. 2, Philadelphia	$34.25 to $36.15
No. 2 Southern, Cincinnati	$34.60 to $39.60
No. 2 Foundry, Chicago	$31.50 to $34.00
Basic Valley Furnace	$30.00 to $33.50
Bessemer, Pittsburg	$33.60 to $36.00

Copper.

The smaller interests in the copper trade appear to be creating the only diversion for an extremely dull market. Small sales have been reported at prices ranging from 20 to 21 cents, according to delivery. But in this connection it was learned that the large producers had made up their minds to follow the example of the smaller interests and offer copper for sale with the proviso that, if the price should drop before the actual time of delivery arrived, the buyer in each case would be refunded the differential between the current price and the 23-cent level. This should have the effect of stimulating trading, since such a proviso protects the buyer. A heavy demand is forecasted both from domestic and foreign sources, and it is upon this assumption that producers are apparently willing to await developments, in the meantime maintaining a comparatively high level.

Tin.

The tin market is still very dull. Replies to the letter, sent out by the importers urging support to the campaign to restore open market conditions, have been coming in at a satisfactory rate, and the importers feel that before long there will be definite pressure brought to bear on the Government to pass some legislation which will relieve the situation.

Lead.

Lead interests are apparently not interested in the market at the present time. Prices remain at the same level, and there is little disposition on the part of any interests to come forward with any demand. The market is stagnant at 6 cents in New York, and 5.70 cents at East St. Louis.

Spelter.

There has been no change in the spelter market, and the situation remains very dull. Quotations are nominal. Prime Western, New York delivery, spot and January, 7.90 cents, and East St. Louis delivery, 7.50 cents.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum (in 50-ton lots)	33 cents per lb.
Antimony, Chinese and Japanese	8 cents per lb.
Solder, No. 1	44 cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying.	Selling.
Copper, heavy	16 to 16½ cents	17 cents
Copper, light	13 to 13½ cents	14 cents
Brass, heavy	8¾ to 9 cents	10 cents
Brass, light	7¾ to 8 cents	9 cents
Brass turning	9 to 9½ cents	10 cents
Tea lead	3⅝ to 3¾ cents	4 cents
Lead, heavy	4¼ to 4½ cents	5 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	10½ to 11 cents	13 cents
Brass, light	10 to 11 cents	12 cents
Brass, medium	9½ to 10 cents	11 cents
Red brass	16¼ to 17¼ cents	18 cents
Cocks and faucets	11 to 11½ cents	12 cents
Copper, heavy	15 to 15½ cents	16½ cents
Lead, heavy	3½ to 4¼ cents	5 cents
Tea lead	4 to 4¼ cents	4¾ cents
Solder joints	12 to 13 cents	14 cents
Mixed babbitt	5½ to 6½ cents	7 cents
Old iron pipe, per ton	$16.00	$17.00

Prices of Soil Pipe and Fittings Reduced.

A decline in the price of soil pipe and fittings has been announced, amounting to $10 a ton at the foundry.

The Pipe Market.

Quotations on less than car lots of full weight steel pipe are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	40	12	....	....
½ inch	44	28	....	....
¾ to 3 inch	47	32	....	....
2 inch	....	....	40	26
2½ to 6 inch	....	....	43	29
7 to 12 inch	....	....	40	25

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong				Double Extra Strong			
	Plain Ends		Plain Ends		Plain Ends		Plain Ends	
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ inch	31	6	....	....	....	....	....	....
½ inch	36	11	....	....	25	....	....	....
¾ to 1½ inch	40	15	....	....	28	....	....	....
2 to 2½ inch	41	16	....	....	30	....	....	....
3 inch	41	16	....	....	....	....	....	....
2 inch	....	....	33	8	....	....	23	....
2½ to 4 inch	....	....	36	11	....	....	25	....
4½ to 6 inch	....	....	35	10	....	....	24	....
7 to 8 inch	....	....	31	6	....	....	19	....
9 to 12 inch	....	....	26	16	....	....	....	....

With threads only, the basing discount is one and one-half points lower. With threads and couplings the basing discount is three points lower. The quotations apply to all quantities less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ and ¼ inch	18	+11	....	....
⅜ inch	19	+10	....	....
½ inch	23	3	....	....
1¼ inch	28	10	11	+6
¾ and 1 inch	28	10	....	....
1½ inch	28	10	20	4
2 inch	....	....	21	5
2½ to 6 inch	....	....	23	8
7 to 12 inch	....	....	20	5

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends, and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	13	+12	....	....	....	....	....	....
½ inch	18	+ 7	....	....	3	....	....	....
¾ and 1 inch	24	+ 1	....	....	8	....	....	....
1¼ inch	24	+ 1	....	....	8	....	....	....
1½ inch	24	+ 1	....	....	8	....	....	....
2 inch	....	....	18	+ 7	....	....	3	....
2½ to 4 inch	....	....	20	+ 5	....	....	3	....
4½ to 6 inch	....	....	19	+ 6	....	....	5	....
7 to 8 inch	....	....	11	+14	....	....	....	....
9 to 12 inch	....	....	6	+19	....	....	....	....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is 1½ points lower. With threads and couplings, the basing discount is 3 points lower.

To ascertain the price in your city, deduct the proper less-than-carload freight rate from Pittsburgh to that city. Example: Base price on ¾-inch black steel pipe is 47 per cent, Pittsburgh, the less-than-carload rate to Patson is 17 cents, and the price, therefore, freight allowed to Patson, 45.3 per cent; on galvanized, 30.3 per cent. All other sizes to be figured on a comparative basis.

EXPORT OF TIN FROM HONGKONG, CHINA.

United States Consul General George E. Anderson, of Hongkong, British China, reports that the heavy demand for South China tin, which has prevailed during 1918, has resulted in the largest export of tin from Hongkong—the entrepot of the trade—in its history and it has led to agitation for increased output. The matter is one of extreme importance; for, while most of the tin now produced in South China comes from a few deposits in Yunnan Province, the field generally is so great and the deposits of ore in Yunnan, near Mengtze, are so rich that there would be a large addition to the world's supply of this metal if certain surmountable conditions should be met.

The whole of the tin now produced in South China, with the exception of inconsiderable amounts from various small workings, comes from the Ko-chiu mines, near Mengtze, in the southern part of Yunnan Province. Up to a short time before the war these mines were worked entirely by native methods, and, in fact, most of the actual mining at the present time is according to those processes. In 1912, however, certain German interests, combined with Chinese capitalists, put in more modern equipment, and since that time most of the output of the mines has been smelted in these plants. The tin is then shipped to Hongkong, where it is refined. Practically the whole of the output follows this course and is exported only through Hongkong, even being shipped from there to various parts of China, notably to Chekiang Province for the manufacture of tin foil for ceremonial purposes, and to Swatow for the manufacture of pewter, as well as in large measure to the United States and Europe.

At present the production depends entirely upon the amount of water available for washing the ore. The tin is extracted during a comparatively short season, beginning in February and ending in May. When there is a prospect of a wet season, the amount is comparatively large. During the last extraction season a special effort was made, and the wet season which followed enabled production to reach the maximum point under present conditions.

At various times in the past, attempts have been made to secure sufficient co-operation among the tin interests and among the Chinese officials to establish a system of water works, which experts report could readily be done at a comparatively low cost. Five years ago an American engineer worked out a complete plan for such an enterprise, but nothing came of it.

The exact output of the Ko-chiu mines cannot be accurately ascertained, since the work is carried on without proper superintendence, is scattered over a wide area, and is in the control of various owners. The customs returns show the export of a little less than 12,000 short tons of the metal in 1917, while the returns for the first eleven months in 1918 indicate an output of perhaps 14,000 short tons. The mines are by far the most important and most profitable enterprise of the sort in South China, if, indeed, not of the whole country.

Card Was Useful.

Her name was Lulu and she knitted a pair of socks to be sent overseas. She put her card in one of the socks and in due time a note came back from the soldier to whom they had been given. It ran:

"Dear Lulu: Last April I received a pair of socks and in one of these I found your card. Please send another pair. I feel that I should have a change."—"Yonkers Statesman."

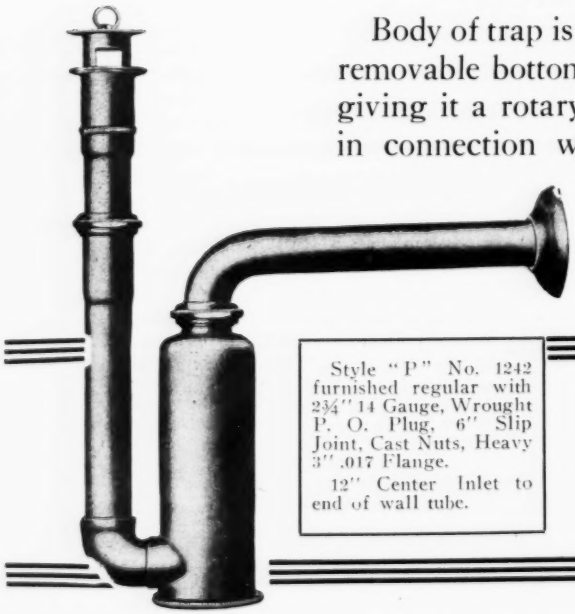
WISECO Plumbers' Sanitary Bras

merits, by Uncle Sam for use in ca

endorsement is sufficient to recommend them
possible to secure better brass goods no matt

The SENECA is a plain, every-day, seamless lavatory trap, made of extra heavy drawn brass, smelted and rolled in our own mill, and finished perfectly smooth both inside and outside. It is especially designed and substantially built for enduring service.

Body of trap is 7 inches long, 2⅝ inches in diameter, with removable bottom. The water enters at one side of center, giving it a rotary or clean sweep motion. This principle, in connection with the smooth interior finish, prevents



Style "P" No. 1242 furnished regular with 2¾" 14 Gauge, Wrought P. O. Plug, 6" Slip Joint, Cast Nuts, Heavy 3" .017 Flange.

12" Center Inlet to end of wall tube.

J.B.WISE, I

Manufacturers of

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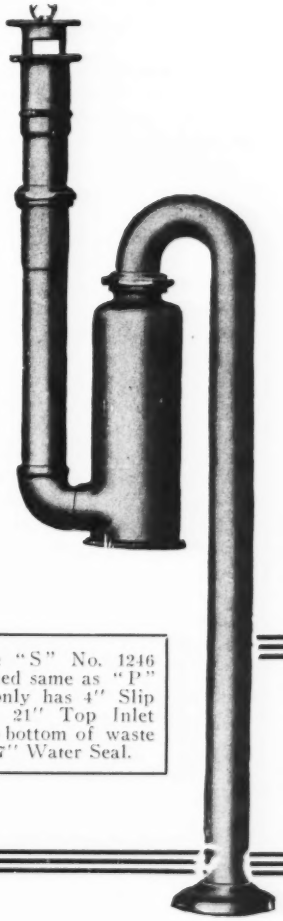
SENECA"

WISECO TRADE MARK EST. 1877 INC. INC. 1912

ras Products were selected on their
cantonments and ship yards. This
hem for use anywhere and everywhere. It is not
matter how much more you may pay for them.

lodging of dirt or other foreign matter in the trap. All tubing 1¼ in. diameter, uniform No. 18 gauge. Inlet 1¼ in. Ground seat on waste. Furnished in any size offset required, any gauge tubing, any length and any length slip joints.

Your jobber is a WISECO representative and can supply your needs in Plumbers' Sanitary Brass Goods—Traps, Waste and Overflows for Basins and Baths, Lavatory Trimmings, etc. Ask him.



Style "S" No. 1246 furnished same as "P" trap, only has 4" Slip Joint. 21" Top Inlet bend to bottom of waste tube. 7" Water Seal.

Inc., Watertown, N.Y.

rs of Plumbers' Sanitary Brass Goods

tory Trap

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago and Vicinity.

Wm. A. Pope, of 26 North Jefferson Street, will install modern heating in a smoke house and office building at Thirty-seventh and Iron Streets.

E. J. McDonough, of 46 East Kinzie Street, has secured the contract for the heating, and H. Breyer, of 2125 Milwaukee Avenue, that for the plumbing in a $45,000 factory to be erected at 1828 North Winchester Avenue.

George Leebody, of 3613 North Ashland Avenue, has been awarded the contract for the installation of plumbing in a wagon shed and hay loft to be erected at 3509 North Ashland Avenue.

Chas. C. Breyer, of 1545 West Division Street, has secured the contract to install the plumbing in a $45,000 factory, being erected on North Winchester Avenue.

Mortimer & Ryan, of 25 East Jackson Boulevard, are installing the plumbing in a freight house in Benton, Ill.

H. P. Reger, of 128 North La Salle Street, has secured the contract for the installation of plumbing in the office buildings, shelters and sand courts being constructed on the playgrounds at Burroughs and Thorpe Streets.

Architect Wm. P. Doerr, of 28 East Jackson Boulevard, is preparing plans for a $400,000, eight-story, two and three-room apartment building, at Hyde Park Boulevard and Dorchester Avenue.

Architect David Saul Klafter, of 64 West Randolph Street, is preparing plans for a $16,000 garage.

Architect Robert Cenek, of 105 South La Salle Street, is preparing plans for a one-story, $15,000 factory to be erected at Wabash Avenue and Forty-second Street.

Architect Carl Nielson, of 1853 Greenleaf Avenue, has prepared the plans and is taking bids for the construction of a $10,000, four story warehouse.

Architect Fred Lindquist, of 179 Wallace Street, is drawing plans for the construction of an $80,000 warehouse.

W. E. Fletcher, of 52 Vanderbilt Avenue, New York City, is preparing plans for a $100,000, two or three-story oil storage building to be erected in Chicago.

Architects Mundie & Jensen, of 39 South La Salle Street, are preparing plans for the construction of a $575,000, two-story and basement manufacturing plant to be erected at Western Avenue near Forty-fifth Street.

Architect A. S. Alschuler, of 28 East Jackson Boulevard, is preparing plans for a $250,000, one and two-story and basement manufacturing plant at Twelfth Street, Fifty-eighth Avenue and Fillmore Street, for the Victor Mfg. & Casket Co.

Architect J. P. Cowing, of 30 North La Salle Street, has prepared plans and is taking bids for the construction of a $20,000, four-story warehouse.

Plans for a factory, to cost about $45,000, to be built at Kolmar and Cornelia Avenues, are being prepared by Architect A. A. Tocha, of 1227 North Ashland Avenue.

Architect C. P. Barnett, of Wilson & Co., Union Stock Yards, is preparing plans for a two-story addition to the canning factory.

Architect R. C. Clark, of Armour & Co., Union Stock Yards, has prepared the plans for a $500,000, one-story fertilizing plant to be erected at Chicago Height.

Other Cities in the State.

W. J. Ruddy, of the plumbing and heating firm of J. J. Ruddy & Sons, of Aurora, is back on the job, after having served several months in the U. S. Army in France. Mr. Ruddy was a member of the 6th U. S. Engineers and was wounded, when his regiment was doing its bit to turn back the Huns at Chateau Thierry.

C. W. Dewey, plumbing and heating contractor of Aurora, is making plans to spend the winter with his wife and family in Southern California.

C. F. Ott, plumbing and heating contractor, Wheaton, who has been confined to a hospital in Rochester, Minn., for the past two months is expected to return in the near future.

F. Clyde Hirleman is the new owner of the plumbing and heating business in Freeport, which has been conducted by Lieber Bros. for a number of years . Mr. Hirleman, who for several years was connected with Lieber Bros., recently purchased the business and will continue it at the old stand, 139 Galena Street.

California

San Francisco and Vicinity.

Since the first of the year a gradual increase in building activities has been noted, but it will be some time yet before contractors can tell whether or not prospective builders are going to hold back in hopes of reduction in costs of material. The plumbing and heating situation has not been relieved to any great extent as yet.

The Palace Hotel Co. is again discussing plans of an addition to the hotel, and it is thought that this year will find the work under way. The high cost of material is the only thing that is obstructing the immediate carrying out of the plans, but some of the directors of the company argue that the reduction, when it does come, will be so gradual, that the prospect of handling so much more business at the same overhead expense, will overshadow the idea of saving a comparatively small sum on the construction work. It is the plan of the company to raise the Jessie and Annie Streets sides to the full eight-stories, which will add 250 rooms to the structure.

The contract for a four-story addition to the Ransahoff Building in Post Street, has been awarded to Barrett & Hilp, of the Sharon Building, at a price of $45,000. The plumbing and heating bids will be called for shortly.

Architect E. E. Young of this city is preparing plans for a three-story apartment house to be erected at Delores and Hidalgo Streets. The construction will cost about $15,000. Bids for plumbing and heating will be taken this month.

Another apartment house plan is being prepared by Architect Albert Schroepfer. The estimated cost of the building will be $30,000. He is also planning alterations of a two-story building to be made into apartments at a cost of $10,000. As yet no plumbing or heating bids have been called for.

Los Angeles and Vicinity.

President Lynn Helm, of the Los Angeles Board of Education, has apopinted D. K. Edwards, chairman, and L. K. Case and C. J. McCormick, members of the building committee. The new committee on purchasing and distribution is composed of C. C. Parker, chairman; Miss Stoddart and C. J. McCormick. As there is urgent need for more school buildings, these committees have a big task ahead of them during their term of office.

Thomas Hogan, 3400 West Pico Street, has the contract for the installation of the steam heating system and plumbing work in a reinforced concrete building being erected at Clarksdale, Arizona, for the United Verde Mining Co.

One hundred thousand dollars will be the cost of a new plant to be erected by Keystone Iron Works on Santa Fe Avenue, after plans by Architect Albert C. Martin, 430 Higgins Building.

A new matrons home will be erected by the county, after plans by Architect Parker O. Wright, to cost about $10,000.

J. G. Morgan, 533 North Oxford Street, has been awarded the contract for furnishing all labor and material for the plumbing and steam heating systems for a hotel building to be erected at San Pedro. The contract will amount to about $12,000.

Other Cities in the State.

There is a plan again on foot to establish hot salt water baths at the south end of Park Street, Alameda. A greater part of the land required for the project has been secured, and a reorganization plan is under way.

An artesian well is being sunk on a new residential tract in Holtville, to be used as a water supply for domestic purposes.

Work has been started on the one-story pressed brick bank building, in Galt, to replace the one destroyed by fire some months ago. It is the intention of the owner to build an addition later, to be used as offices. Plans call for modern plumbing and heating.

Architect Edward Perry, of Vallejo, has completed the plans for the new Solano County Hospital at Suisun, and it is understood that the supervisors will arrange for the work to be started at once. Modern plumbing and heating systems will be installed.

Architect Julia Morgan is preparing plans for a tubercular ward building to be erected in Ahwance, at a cost of $12,000.

The Home Laundry Co., of Richmond, which was recently destroyed by fire, will be rebuilt at once, according to Manager Jack Best, and modern plumbing and heating equipment will be installed in the new structure.

Architect Chester H. Miller, of San Francisco, is completing plans for alterations on two frame buildings and for the erection of a new three-story brick building at Grand Avenue and Webster Street, Oakland. The estimated cost of the work is $60,000.

A factory for the California Metal Works is to be erected at a cost of $30,000 at Forty-seventh Avenue and East Twelfth Street, Oakland.

C. M. McGregor, of Oakland, has arranged for the construction of eighteen homes in Humboldt Avenue, East Oakland. The plumbing contracts for these houses have not yet been awarded.

A Group of Ladies at the Lawrence Convention of the Kansas Master Plumbers' Association.—From "Domestic Engineering" Photo.

Missouri

St. Louis and Vicinity.

John Laurance Mauran, former president of the American Institute of Architects and chairman of the municipal improvement bond issue committee, has recommended that St. Louis spend $23,384,000 for public work the next three years. A charter amendment providing for a bond issue covering this amount will be submitted to the voters in the April election. The original estimate calls for an issue of $39,000,000.

Bradley Heating Co. has secured the contract to install the heating system in the new Seventeenth Street Building, to be erected at Seventeenth and Washington Avenue by George Warren Brown. The estimated cost of the building is $500,000. The building will be nine stories and a basement.

Anthony Eichler has secured the contract to install the heating system in the $20,000 machine shop to be constructed at Columbia, Mo., for the University of Missouri.

C. E. Hamilton has secured the contract to erect a $25,000 round house for the St. Louis and San Francisco Railroad at Kansas City.

E. F. Gardner, 920 Morgan Street, has secured the contract for the installation of plumbing in a residence at 14 North Fourteenth Street.

Edward G. Shirk, 6608 Bartmer Street, has been awarded the contract for the installation of plumbing and heating at 5541-43-45 Lansdown Avenue.

R. G. Hopper & Co., 214 South 12th Street, have taken out a permit to install the plumbing in a new residence at 3549 Lindell Avenue.

Albert E. Dillon, 5453 Gilmore Street, will install modern plumbing in a building at 5541 Harney Street.

Charles T. Herbert, will remodel the plumbing in the property at 6914 West Pine Street.

Jacob Ruedi, veteran master plumber of 2117 South Seventh Street, has closed out his business in St. Louis and will depart for Tucson, Arizona, on January 20. Mr. Ruedi has just recovered from a severe attack of influenza and he is going West for his health. He expects to look around Southern Arizona and eventually pick up a small ranch for himself. Mr. Ruedi has been in the plumbing business at 2117 South Seventh Street for twenty-seven years. He learned the plumbing trade with William F. Lambe, in the good old days and built up a splendid business for himself.

Abel-Gerhard Plumbing Co. has just finished the installation of eighty-seven new bathrooms in the Terminal Hotel, which has been completely overhauled. This company also

is installing the plumbing in the monster Bevo building of the Anheuser-Busch Brewing Association. This is the largest plumbing contract ever let in St. Louis. The approximate cost of the job is $300,000. The plans call for 600 toilets, 600 wash basins and miles of pipe. Part of the building has been completed and is now occupied by a branch of the United States Quartermaster's Department.

J. L. Wees, Commercial Building, is receiving bids for an $8,000 residence to be erected by Harry B. Krenning. The location of the house has not been announced.

Architect William Wedemeyer, Wainwright Building, has completed plans for an office and bank building to be erected at Sullivan, Mo. Fisher Bros., Sullivan, Mo., are receiving bids on the various contracts.

E. H. Harper, city clerk of Kirkwood, will shortly advertise for bids to construct a $15,000 fire engine house at Kirkwood, the plans of which have just been completed by D. H. Mullen, Chemical Building, St. Louis.

Architect J. M. Dunham, 1201 Chemical Building, has executed plans for a large addition to the American Railway Express Co.'s Kansas City office and is now taking bids on the work.

Minneapolis and Vicinity.

Strader & Greening, for many years one of the leading concerns on Lake Street, have dissolved partnership. Harvey Strader remains as proprietor of the business and already reports that he has landed contracts for the installation of the plumbing in five houses, to be erected at Forty-second Street and Snelling Avenue, by the G. F. Rabehl Co. Mr. Greening has become affiliated with one of the large local automobile agencies and will undoubtedly be as successful in selling autos as he has been in landing contracts for plumbing jobs. Mr. Greening has just been installed as Master of Ark Lodge, A. F. & A. M., one of the largest and most progressive bodies in this city.

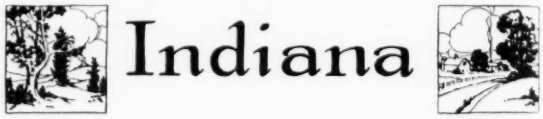
Hineline & Co. have been awarded contracts for the installation of plumbing and heating systems in the Nurses' Home at St. Mary's Hospital of this city. Hineline & Co. are one of the live concerns of this city, and their slogan, "We go everywhere," is well adapted to their activities.

Oscar Johnson, Jr., plumbing and heating contractor at 1517 Sixth Street Southeast, advises us that he has awarded contracts for the additional plumbing and heating in his home, which he is now remodeling, to himself and that he will not take any additional bids on the same.

There is already a noticeable improvement in local conditions. Some of the contractors are already starting new houses and others are busy on plans. There is also some interest among prospective tenants for new locations and several landlords are busy preparing office quarters for the use of the returning doctors and dentists. The decline in the prices of boilers and radiators has also brought some inquiries, many of which will be turned into contracts.

The Minnesota legislature is in session with two Minnesota master plumbers on the job. Fred Lang is there as a representative for the second time from a Minneapolis district, and Michael Boylan, of Virginia, a former mayor of that city, is seated as a representative for his first term. Both are live wires and will be heard from before adjournment.

Louis F. Nienaber, for many years one of the leading master plumbers of St. Paul, has laid aside his trade and moved to Akron, O., where he is identified with one of the tire manufacturing companies. "Lew" was one of the standbys in association work in St. Paul and the state of Minnesota, and his departure at this time leaves a gap in the ranks which will be hard to fill. He has attended several of the National conventions and his many friends in the trade will, no doubt, join with Minnesota in wishing him unlimited success in his new venture.



Indianapolis and Vicinity.

Indications of extensive building activity in Indianapolis during the coming spring and summer are appearing daily in the offices of Blaine H. Miller, city building commissioner. The pressure of the building needs, delayed many months because of conditions imposed by the war, and the prospect for a further stimulation for building enterprises through the reduction of the cost of material are reflected in the constantly increasing number of inquiries regarding building regulations and the number of rough plans submitted for investigation as to their compliance with state and city building regulations. Building operations in December exceeded those of the same month last year according to Mr. Miller's report. The record for December, 1918 was 222 permits on property valuations of $167,339. The record for December, 1917, was 130 permits on property valuations of ony $85,943.

Construction of a central heating plant, in Gary, will be started early in the spring, and the first unit, costing more than $200,000, will be placed in operation by the first of September, 1919, unless unforeseen obstacles intervene. The Gary board of public works, at its meeting last Monday afternoon, approved the contract with the Central Heating Co., of Gary, providing for the extension of its franchise and allowing the company until next September in which to place the first unit of its proposed plant in operation. Owing to the war, the Central Heating Co., composed of C. H. Maloney, Ingwald Moe and Henry Vossler, was prevented from beginning construction, and the action of the board of works was taken in order that the company might be given additional time in which to comply with the provisions of the original franchise. The company has already installed a section of its heating main and will start other work as soon as the weather becomes seasonable. The heating plant is to be erected on the high line railroad west of Broadway. The heating pipes will cover the downtown district, between Fifth Avenue and Fifteenth Avenue. The first unit of the plant will include the erection of a large power house, from which the steam pipes will radiate to all parts of the business district.

Other Cities in the State.

Despite conditions brought on by the war, H. G. Newman & Co., plumbing contractors at Evansville, was one of the busiest concerns in the state during 1918. The company did the heating and plumbing work for the new West Side high school building and the Dyer Canning Co.'s big plant at Evansville, and in addition had a large amount of out-of-town work, including work on two new schools at Boonville and on the Oakland City training school.

The William Sibley Co., plumbing and heating contractors at South Bend, has received the contracts for the installation of plumbing and heating systems in the new school building that is to be erected at Twin Branch, near South Bend. The cost of the new structure will be $20,000.

Pennsylvania

Pittsburgh and Vicinity.

New building permits are continuing to show that business is gradually reviving. Hugh and C. L. Wilson have taken out a permit for an eight-room, brick veneered, duplex house at Kincaid and Fairmount Streets, to cost $40,000; another permit was issued to the Union Ice Co. for general additions and repairs to the plant on Beaver Avenue, North Side, to cost $18,000.

S. P. Trimble, president of the Pittsburgh Builders' Exchange, has just broken all records by being elected to head the organization for the fifth consecutive term. When the board organized last week Mr. Trimble was unanimously chosen to retain the position he has filled so efficiently for the last four terms, and many complimentary remarks were passed concerning his efforts in behalf of the exchange. D. T. Riffle was elected first vice-president; George T. Heppenstall, second vice-president; H. L. Kreusler, third vice-president; J. Charles Wilson, fourth vice-president; Eli Abbott, treasurer. Secretary and Manager E. M. Tate was re-elected to his present places. John A. Strouss, former treasurer, stepped out on account of ill health.

An investigation is being made here to determine as far as possible just how far faulty sanitation may be responsible for the great increase in Pittsburgh's death rate during 1918. The increase amounted to more than 50 per cent but, of course, much of this is the result of the influenza epidemic. The figures show a rate of 24.2 per 1,000, as compared with 17.7 during the previous year.

In the recent report of the annual meeting of the Building Construction Employers' Association of Pittsburgh, our correspondent made the erroneous statement that one of the vice-presidents, W. F. Hughes, was a member of the Hughes Heating Co. Mr. Hughes is associated with the McGinness-Smith Co., and has been connected with this concern for thirty years.

Philadelphia and Vicinity.

A. W. Kaldenbach has been awarded the contract for the installation of plumbing and heating systems in the Officers' Barracks and Quarters Building to be erected at Washington, D. C., for the Government.

George Schreider, of Lebanon, has secured the contract for the installation of plumbing in the Bethlehem Steel Co.'s new building at Bethlehem.

A. C. Shand will install the plumbing in the engine house to be erected for the Pennsylvania Railroad in Marietta.

The business of the late Wm. L. Bodenstine, at 2921 Ridge Avenue, will be continued by his daughter. Mr. Werner, who has been connected with the establishment for many years, will remain as superintendent.

M. H. McCloskey, Jr., of 1620 Thompson Street, was the lowest bidder for the plumbing in six cottages to be erected by the State Department of Health in Hamburg, Pa.

Wm. G. Cornell & Co. have been awarded the contract for the installation of plumbing in the hospital to be erected in Chester by the Sun Ship Building Co.

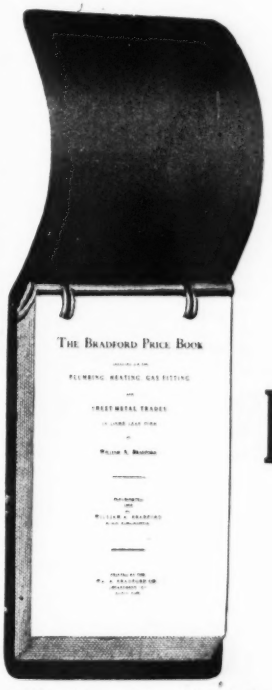
J. J. Finneran, of Conshohocken, will install plumbing and heating systems in a new school to be erected in Iron Hill.

J. I. Finneran, of Conshohocken, will install plumbing and heating systems in the new residences being erected by Ed. S. Harrison. The contract amounts to $10,000.

Start the New Year Right

Stop Guessing!

The majority of plumbers and steamfitters are too busy to figure out the exact sale price—based on a living profit—of each article they handle or furnish on a contract. To save time, they guess at it and take a chance on the price being correct.



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will give you this information accurately and quickly. All you have to do is to turn to the page containing any desired article and you have at your finger's end the Cost, Net and Resale figures.

No man in the trade who is using the Bradford service and knows its worth, would get along without it. The price is only **$12**, which covers revised sheets for one year showing price changes.

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Sample Sheets Free.

Wm. A. Bradford

Department C

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to help conserve the fuel supply—to assist in meeting the demands for heat in the homes? Have you investigated the wonderful results obtained by

The Barber Patented Natural Gas Burner

Built on an entirely new scientific principle—no air mixers to bother with—no dangers from the gas pressure getting low and the flame backing out—the Barber Burner is **guaranteed** to maintain an average heat of 70 degrees in zero weather upon one ounce gas pressure.

OUR GUARANTEE
The Barber Patented Natural Gas Burners are guaranteed to furnish an average heat of 70 degrees Fahrenheit, in zero weather, upon gas pressure of one ounce, and further to remain burning upon atmospheric pressure if properly installed and if instructions are carefully followed.

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—as the name implies — are absolutely dependable in service and wearing quality.

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Our Malleable Fittings are famed for their great strength and light weight. Recommended for 150 lbs. steam working pressure. Will not leak air.

Write for Catalog.

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DETROIT, MICHIGAN

A. C. Shand, of Broad Street Station, will install new plumbing in the Pennsylvania Railroad's lavatories, lockers and lunch rooms. The contract amounts to $15,000.

R. H. Watson, one of the best known master plumbers of Philadelphia, is confined to his home by serious illness. His many friends in the trade hope for his speedy recovery.

E. P. Saeger, of Allentown, has secured the contract for the installation of plumbing in the storage and warehouse being erected in that city for J. A. Rupp.

Kentucky

Louisville and Vicinity.

"Lookout for February" is the admonition of the master plumbers of Louisville in commenting on the fact that there has been no zero weather this year, and less rush work than for several winters past. To date zero has not been reached, and weather reports show the mildest weather experiences since 1891 for the fall and winter. Not even a really good snow flurry has been experienced, and the streets have been free of ice and snow so far. However, such periods are generally followed by very bad February weather.

As a result of the remarkably mild weather, there has been a better percentage of outdoor work than usual, and there has not been any halt called on account of bad weather to date; however, the usual heavy repair work is absent. During December and January of last year the trade worked night and day. This year there has not been any rush whatever, but at that the trade is managing to keep fairly busy.

At Camp Knox plumbing and general work has been at a practical standstill. The Government recently announced that it would take over the job from the contractors and complete it with soldier labor. However, nothing has been done as yet, other than calling off the men, as above ground working water lines are frozen up part of the time, and railroads have declared embargoes against further shipments of material, until material on hand is worked up, as there is no place to put it except in the open and there have not been enough men on hand to unload material since overtime and Sunday work was called off, resulting in most of the men leaving the job.

The Louisville Master Plumbers' Association recently held its annual election of officers, with the following results: President, J. J. Bosemer; vice-president, B. B. Watts; secretary, W. H. Matlack; treasurer, G. Phil Miller. George W. Schardein, the retiring president, who had served six consecutive terms, was presented with two library chairs, a foot stool, smoking cabinet and general den outfit. A lunch and smoker followed the election.

George W. Schardein, head of the F. S. Schardein & Sons Co., has entered the auto business as a side line, being one of the incorporators of the Attix-Schardein Motor Co., of Louisville, which is capitalized at $2,000. The capital is fully subscribed, Mr. Schardein holding one-half interest, and Mr. Attix the other half.

Albert Clegg, of the F. A. Clegg & Co., heating and ventilating engineers, who has been in the East as a sergeant in the Quartermaster's Department of the army, has been mustered out, and is back on the job again. Mr. Clegg married Miss Mary Seiler, of Louisville, shortly after entering service.

James McWilliams, head of the James McWilliams Heating Co., of Louisville, who was knocked unconscious

and robbed by a thug a few months ago, and then denied vengeance through the courts placing the bond at such a low figure that the thug jumped his bond, now has a chance to punish "John Doe," as the thug was registered, as he has been captured in Cincinnati for another hold up job. Mr. McWilliams got his money back at the time of the robbery, as a friend got the better of the thug, who became careless with his gun for a second. However, he still remembers the severe bump which he received.

E. A. Bywater, plumbing contractor at 547 South Seventh Street, had unwelcome New Year's callers. When he entered his place of business the next morning, he found that thieves had stripped all samples of brass goods from the showroom, and taken all the brass stock they could find about the place. The loss amounted to about $200.

E. L. Hugh has closed his plumbing business at 513 East Jefferson Street.

Other Cities in the State.

The American Pipeline Co., at Bowling Green, is planning to double the capacity of its present oil lines in the western Kentucky field.

Ernest Daugherty, of Bowling Green, on January 1st, moved to larger and better quarters on Park Row, formerly occupied by R. E. Allison. He will add a line of electrical mechandise to his plumbing and heating business.

B. F. Kirk, of Owensboro, has purchased the interest of his partner in the plumbing establishment of Kirk & Johnson, and will hereafter operate the business on his own account.

Massachusetts

Boston and Vicinity.

The new North Suburban Association of Master Plumbers, composed of master plumbers from half a dozen cities and towns within a few miles north of Boston, held its first annual meeting at Malden on Friday evening, January 10th. Thomas F. Garvey, of Everett, president of the Malden, Medford and Everett Master Plumbers' Association, which has been merged in the new organization, was elected president. John J. Mullen, former mayor of Everett, was named as vice-president; J. Herbert Reynolds, of Stoneham, recording secretary; Luke Bresnahan, of Medford, financial secretary, and Edwin Troland, of Malden, treasurer. A conference committee was named as follows: Matthew F. Coakley, Malden; Frank B. Woods, Everett; Andrew F. Curtin, Medford; S. Pearl Brock, Melrose; William G. Stretton, Woburn; William A. Gilchrist, Wakefield; T. C. Fife, Reading; and C. W. Houghton, Stoneham. Neil McNevin, of Malden; J. H. Reynolds, of Stoneham, and George C. Torngren, of Everett, were named as a membership committee. The meetings of the association will be held on the second Wednesday of each month at Malden.

The plumbing and heating business of Pearl S. Bradford, of Newburyport, has been purchased by J. Merton Buswell, a former employe of Mr. Bradford. The former owner will continue as manager of the business, which will remain on Market Square. Mr. Buswell has recently made his home in Salisbury. He learned the plumbing trade with Mr. Bradford about fifteen years ago and remained with him for several years, later being employed in Portsmouth and elsewhere.

DEHN'S SANITARY SAFEGUARDS

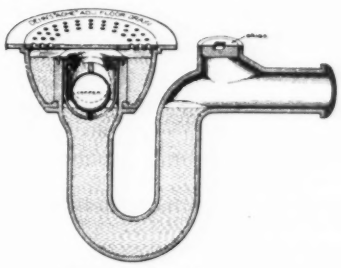

Fig. 7 Patented.

The war's end means the end of restrictions on buildings of every class. This will mean thousands of new buildings to be erected, everyone with its opportunities for you, especially for the installation of **Modern Sanitary Drainage systems.** The most important fixtures to be installed are the Floor Drains.

We manufacture a complete line of improved Floor and Garage Drains. They are approved and recommended by **Boards of Health and Fire Prevention Bureaus** everywhere. Complete information furnished free.

Compound Injector & Specialty Co.

Originators, Designers and Sole Manufacturers of Dehn's Sanitary Safeguards

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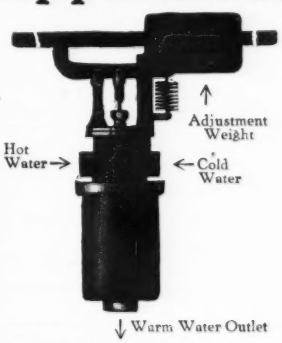
MADE IN U.S.A. POWERS THE POWERS REGULATOR CO. REGULATOR



THE POWERS THERMOSTATIC WATER MIXER

The regulator is designed for use in industrial processes where water of a certain temperature is desired at one stage of the work, and at other temperatures at other stages—But always accurately regulated. It mixes hot and cold water, and by means of the lever and weight the temperature of the water at the outlet may be fixed, at will. It is adjustable over a wide range of temperatures, and will be found valuable in bakeries, for instance, where water of different temperature is needed for different batches of dough, and must be just right, to get the best results. Also is used in dry kilns, for regulating temperature of Spray.

See Bulletins 142 and 143.

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Specialists in Automatic Heat Control

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SEE CATALOG "H"

Wolverine Brass Works

Grand Rapids, Mich. San Francisco, Cal.

solves the sprinkling problem for lawns and gardens. Set level with the ground—no hose. Gives a fine misty spray like rain. Uses but little water. Cannot freeze as sprayer is automatically drained.

Write for sample Sprinkler and Booklet.

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STOP THAT LEAK IN 10 TO 30 MINUTES

Don't waste time and put the boiler out of commission in order to locate and repair cracked sections—use

ECONOMY Boiler Seal

Pour it into the water in boiler and it will find and stop the leak permanently in less time than it takes to get ready to apply other methods.

Try it once—you will use it always.

Economy Scale Remover Co.

Chicago Heights, Illinois

J. Edward Ludden, who conducts a plumbing business at Weymouth, has recently purchased the Pratt Building in Washington Square, Weymouth, and after alterations are made plans to move his business there.

The Massachusetts Sprinkler and Equipment Co., plumbing, heating and sprinkler contractors, recently located at 7 Water Street, Boston, has moved to larger quarters at 61 Washington Street, North. P. J. Sullivan, former president of the Massachusetts State Association of Master Plumbers, is the head of the concern.

Haverhill.

William B. McAree was re-elected president of the Haverhill Master Plumbers' Association at the annual meeting held at Haverhill on January 3rd. Other officers elected were O. F. Bennett, vice-president; Clarence M. Neily, secretary, and C. A. Anderson, treasurer. Mr. Neily is entering upon his seventh term as secretary. An executive board composed of C. G. Miller, J. P. Butler and Mr. Neily also was chosen at the meeting. The annual report of Treasurer Anderson showed the finances in good condition and he was commended for his work. Secretary Neily reported an active membership of 14 and an average attendance at the weekly meetings during the year of 80 percent of the membership. Few associations meet oftener than twice a month but members of the Haverhill association believe that weekly meetings not only add to the interest but also make the association of more individual value to the members. Several social events are planned for the near future. The Haverhill association has three men in government service. G. B. Stiles is in the Merchant Marine and two other members are employed at shipyards.

Lawrence and Vicinity.

The new board of officers recently elected by the Master Plumbers' Association of Lawrence and vicinity is laying plans for a busy year. Several well-attended meetings already have been held and much interest is being shown in the work of the association. One member of the organization, George Walsh, of the firm of M. T. Walsh & Son of Andover, is serving in the navy. The officers of the Lawrence association are: President, James H. Bain; vice-president, William Leitch; secretary, Harry J. Welch; treasurer, John H. Maxwell; auditing committee, John E. Barr, Harry J. Welch and William A. Corey.

O. J. Cullington, plumbing inspector of Lawrence and secretary of the New England Association of Plumbing Inspectors, has this week sent out the official call for the annual dinner and election of officers, to be held on Wednesday, January 29th, as already announced in "Domestic Engineering." The meeting will be held at the Quincy House, Boston, and Inspector Andrew J. Burnett, of Melrose, chairman of the Ways and Means Committee, is arranging for an excellent dinner and an interesting program. The question of the standardization of inspection rules throughout the section will be one of the subjects for discussion.

Late News from Oregon.

The S. B. Barker Co., of Condon, will install a heating plant in its large department store

There is a large amount of new work in contemplation in Pendleton, although active construction work has not been started. There is a general disposition to wait for a possible reduction in material costs, although a large number of small jobs will be undertaken immediately.

A new school building, 140 by 80 feet, two stories and basement, will be erected in St. Helena, from plans prepared by Tourtellotte & Hummel, McKay Building, Portland. The structure will cost about $40,000. A steam heating plant and modern plumbing will be installed.

New York

New York City and Vicinity.

A feature of the regular semi-monthly meeting of the Brooklyn Branch of the New York City Association of Master Plumbers, held on Friday evening, January 10th, was the installation of the newly elected officers. It was a time for celebration, wherein the members deviated somewhat from the strictly formal procedure that installation ceremonies are supposed to present. Not just the re-election of President Frisse, but his acceptance of another term at the helm was a source of gratification to and jollification on the part of the rank and file, and there was no lack of evidence of this fact in the reception accorded him. Mr. Frisse's whole-hearted devotion to anything he tackles and his almost unlimited capacity for accomplishment by sheer hard work as well as the force of his genial personality are well reflected in his administration of the presidency during the year just ended.

In a characteristic straight-from-the-shoulder address he impressed upon the members the necessity for co-operation, now, even more than before, in the face of the gigantic task of readjustment, with everyone working in harmony and mindful of his individual share of the responsibility. He said: "The year upon which we are now launched can be made a successful one. The basic elements for prosperity are not wanting." He pointed out that the adjustment of material prices is now under way and felt that a consistent and staple level would be reached before long. The labor situation is also being adjusted and builders, following a long period of inertia, are anxious to go ahead. He hinted at some new plans, which he has in mind for the extension of the association's usefulness and in continuing in office he felt assured of the association's unlimited support in his attempt to make the ensuing term a red letter success.

As a running mate, Vice-President Thomas E. McEnaney will be of no small assistance to President Frisse. He reflects the same spirit of progressiveness as his senior officer and has been well schooled in all branches of association work. In taking office Mr. McEnaney recalled some instances of his early career as a master plumber. He said, among other things, that the first thing he did after securing his license to conduct his business, was to join the association, not that he had any idea of its work, or the importance of such membership, but he thought it a good business move in a general way. Now in reflecting over the years of contact with its members, he said, he could clearly see the important part the association has played in his subsequent success. While he knows now, he said, that had he not joined, he would have lost an opportunity that has contributed in no small measure to the up-building of his business, and the improvement of his condition, yet the importance to him of that same association and the benefits he was deriving from his constant contact with his fellow associates were never apparent at the time.

J. J. Dixon spoke of the excellent support the association had rendered in a financial way. Liberty Bonds or charitable appeals were not made in vain to the master plumbers. In this he said the trade had lead any other branch of the building industry. He also said the finances of the association are in a good condition and he bespoke a gratifying future in all departments of the association's activities.

The Victory Reception and Ball Committee, through its chairman, M. J. Kennedy, reported progress in the work of

IN A CLASS ALL ITS OWN

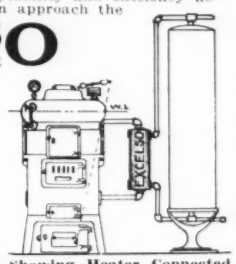
For simplicity, economy, adaptability and efficiency no water heater on the market can approach the

EXCELSO WATER HEATER

Consists of a one-piece casting with two separate chambers. Does away with coils in firepot, can be connected either vertical or inclined and never heats water to boiling point, hence none is wasted.

Three sizes for use below water line—tank capacities 40, 70 and 100 gallons. Heats storage tanks up to 800 gallons by use of live steam.

The plumber makes a good profit and gives satisfaction on every job. *Write for Booklet.*



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1377 MAIN STREET BUFFALO, NEW YORK

Eagle All Lead Roof Flange

LEAD PIPE
Length, 6 inches
Diameter, 4½ inches
Made in Angles, 45 deg., 22½ deg. and Straight.

SIZE OF APRON
15 inches Square

No Caulking To Be Done
Joints Lead-burned — No Solder Used
Flexible Adjustable Economical
Write for Circular and Prices.

Manufactured only by

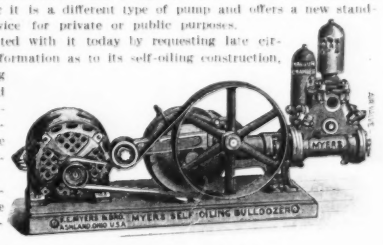
The Eagle-Picher Lead Co.
CINCINNATI, OHIO

MYERS SELF-OILING POWER PUMPS
For General Service

Your customers will welcome this pump—it won't be long until you make it your leader, for it is a different type of pump and offers a new standard of power service for private or public purposes.

Become acquainted with it today by requesting late circular with full information as to its self-oiling construction, covered working parts, new method of power application and other features, which place it in a class by itself.

Your communication will receive immediate attention.



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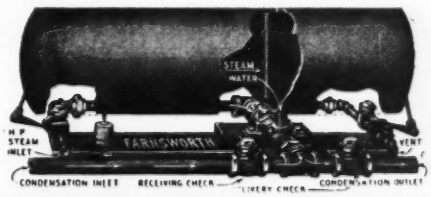

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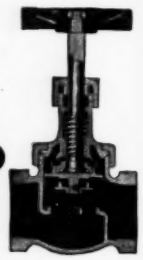

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Let us send you catalogue showing line complete and quote prices on your requirements.

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The Milwaukee Mixer

Anti-Scalding
Leak-Proof

Accessible
Durable

No Cams

Made to suit all conditions

No Springs

Order from your jobber

Fig. C-15

The Milwaukee Flush Valve Co.
MILWAUKEE, WISCONSIN
Specialists in the Manufacture of Valves

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NOW IS THE TIME FOR ALL THINGS
NATIONAL

Damper Regulators

High Pressure
Low Pressure
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Hot Water
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Type F 2-inch for Hot Water Boilers

National Regulator Company
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Dole PACKLESS GRADUATED RADIATOR VALVE

Embodies a new and exclusive DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE without extra cost.

Write for new circulars.

Complete Line of Standard Steam and Hot Water Radiator Valves

THE DOLE VALVE CO. 208 No. Wells St. Chicago

arranging the details for the affair. It is hoped that a date and place can be definitely determined on very shortly so that the many side issues of the work may go ahead.

Washington

Seattle and Vicinity.

The main subject of interest to contractors, builders and men of all allied trades at present is the matter of costs in building. Some contractors believe that no noticeable decrease will be experienced for two, or possibly three years; while others are confident that the cost of erecting certain classes of wooden buildings will be materially decreased within the present year. In the meantime, there is a tendency to delay new construction, until conditions are somewhat more settled.

The annual report of the city superintendent of buildings for Seattle shows that, during 1918, building operations in the city increased 60 per cent over the previous year, with a total building cost of $10,899,755. Detached residences to the number of 3,917 were constructed, valued at $4,875,770. Even this large number of new homes was not sufficient to meet the ever-increasing demand for new residences. The signing of the armistice has not slowed up the demand for new homes—in fact, the Home Building Campaign officials assert that the demand is as active as ever, and that scores of new homes are urgently needed.

Plumbing and heating contractors report that business is somewhat slack at present. There are no new enterprises of any great magnitude coming up at present, although considerable jobbing and repair work is on hand.

Dr. J. S. McBridge, city health commissioner of Seattle, is preparing a bill which will be submitted to the city council asking that the city health department be given authority to require that all apartment houses be kept heated to a certain degree during the winter months.

Architect John Graham has completed plans for a new club house for the Seattle Yacht Club to be built at a cost of $35,000. Modern heating and plumbing systems will be installed.

Architect B. Dudley Stuart, Seaboard Building, has prepared plans for the construction of ten new residences on Thirty-second Avenue West, in Prosser Park Addition, for Mrs. Nellie Clark. The homes will be of entirely different designs. Architect will receive bids for general and sub-contracts.

Architect J. R. Nevins, 1709 Hoge Building, will shortly call for bids for general contract, and the plumbing and heating in a three-story brick hospital to be built for Dr. J. W. Wilkins, at Sixteenth Avenue and John Street. The building will cover a ground area of 72 by 34 feet, with a wing, 34 by 34 feet. A vacuum heating system will be installed.

Architect V. W. Voorhees, Eigel Building, has completed plans for the construction of a two-story addition to the West Seattle Bank on West Alaska Street and California Avenue, to cost $15,000. The first floor of the proposed structure will be used for stores, while the second floor will be divided into apartments. Hot water heating will be installed.

A new hotel is to be built in Tacoma by a citizen's committee, headed by H. F. Alexander, president of the Pacific Steamship Co., which will cost about $1,000,000. The present site of the Tacoma Hotel will be utilized, and a portion of the old structure will be retained. The building will be ten stories in height, and constructed of reinforced concrete and brick.

Other Cities in the State.

The city of Bremerton, where the Puget Sound Naval Yard is located, is still experiencing a tremendous demand for houses and rooms to rent, and the coming of peace has brought no lightening of the pressure for homes. The Government's building program of 250 houses, two apartment houses and a 350-room hotel will not be sufficient to meet the housing demands, according to present indications. All of these accommodations have been assigned, and there are several hundred additional applications on file for a place to live. The yard has contracts for a number of vessels, and this fact together with the early return of the Pacific fleet from the war zone, indicates that the working forces of the navy yard will be maintained on practically its war-time basis.

Southwestern Washington, including the Grays Harbor country, is to experience a considerable development during the new year, according to the opinion of contractors and architects in that district. A number of projects delayed by war restrictions are being revived, and a strong effort will be made to complete them during the year. The city of Aberdeen, particularly, looks for great activity in building. During the past year, the house shortage has been extreme, and every effort will be put forth to build a sufficient number of new homes to meet the demand. During the past year, more than $300,000 was invested in building enterprises in Aberdeen, and it is confidently predicted that the coming year will show a considerably larger volume of new work. Included in the proposed work are a number of fine new residences in the Broadway Hill District for which plans are now being prepared.

The Knights of Pythias Lodge, Walla Walla, has announced that, in the near future, bids will be asked for the construction of a new temple, 60 by 130 feet, two stories and basement, to cost about $50,000.

The city of Walla Walla, during the year 1918, expended almost $250,000 in new building projects, which is considered a splendid showing for a town of its size, and, under war-time restrictions, contractors in the city assert that the new year will show a considerably larger sum spent in building, judging from the projects under way, and those on which plans are being prepared. Many new residences and a number of new farm buildings, work on which has been delayed during the war period, will now be undertaken.

There has been less money spent in building in Spokane during the past year than for a number of years, and the total cost of building will in all liklihood not reach the half million mark for the year 1918. It is believed, however, that the year 1919 will show a decided impetus to building. Farmers have been exceedingly well paid for last year's crops, and it is expected that a number of improvements that have been contemplated for a year or two, will be undertaken early in 1919.

Late News from Atlanta, Georgia.

Charlie Blackstock, who has been confined to his home for several weeks by an attack of influenza, is back on the job again and is "feeling fine."

The first building permit issued in this city for 1919 calls for a $100,000 apartment house on West Baker Street.

W. B. Boatenreiter, of the Boatenreiter Plumbing Co., was elected Worshipful Master of E. A. Minor Lodge, A. F. & A. M., at the annual meeting in December.

Now is the time to begin to prepare for the Fifth Liberty Loan.

"LYROCO"

Low Pressure Direct Return Trap

For all types of

Steam Heating Systems

Eliminates Air, Promotes Circulation, Saves Fuel

Write for full information

Manufactured by

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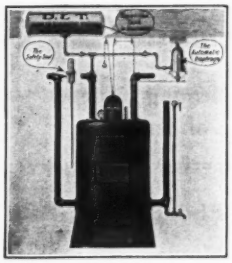
Originators of This Style Trap

D & T Tank-in-Basement System

Saves 25% on Coal Bills



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Over 35,000 D. & T. systems now in use.

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D & T Manufacturing Co.

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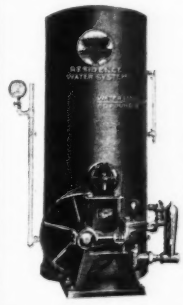

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Residence Water Systems—they've got the money to pay for them and are just waiting for you to sell them.

That's Your Job

Write or wire for nearest representative.

Makers of "DURO" Guaranteed Residence Water Systems.

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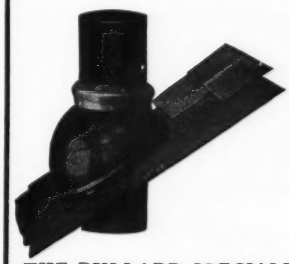

Therefore, some PLUMBER is the father of every leaky roof.

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is acknowledged as the only PERFECT FLANGE by busy men who have made satisfying installations.

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LEAD TRAPS

Manufactured by

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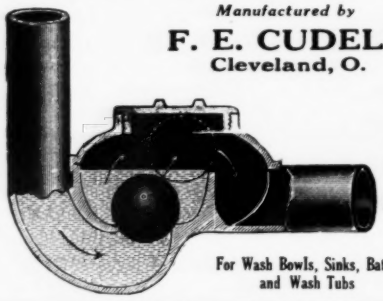

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For Wash Bowls, Sinks, Baths and Wash Tubs

HAYNES SELLING COMPANY

Heating Specialists

Modulated and Vacuum Heating Systems Adapted for all Types of Buildings

Over 25 Years' Experience

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What Is There Then, You Want To Know?

We say the CLEAN SWEEP TRAPS are the most Satisfying. ANTI SYPHON TRAPS the best for durability, the quality unquestioned.

The Appearance exceptional and the Service sure.
They meet up with all the iron clad arguments for good work.
Fit anything—anywhere—anyhow.
Homes—Offices—Factories.
Made Safe, Sane and Sanitary.
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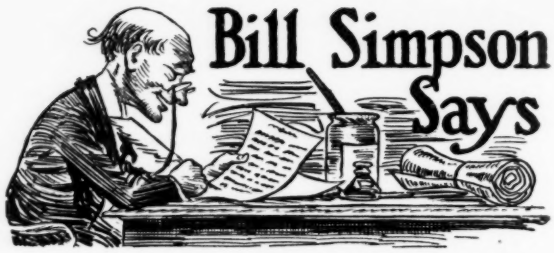


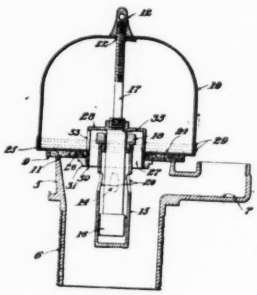
(With Apologies to K. C. B.)

The other night
* * *
A friend of mine 'phoned
* * *
And asked me to come over
* * *
And join in a game of
* * *
Penny ante.
* * *
I went—and imagine
* * *
My extreme surprise, when
* * *
I was introduced to a man
* * *
Who is totally blind.
* * *
He was one of the players.
* * *
I felt pretty sorry for him.
* * *
However, as the evening moved
* * *
Along—I found that the
* * *
Poker chips were all moving, too,—
* * *
In the direction of the
* * *
Man who was so blind he couldn't
* * *
Tell day from night.—
* * *
We used a special deck
* * *
Of cards, of course.—
* * *
When we quit, at about
* * *
Three a. m., our friend,
* * *
The unfortunate blind man,
* * *
Had "gone into" all of us.
* * *
I couldn't help but philosophize a bit.
* * *
This man, handicapped, as he is,
* * *
Is an excellent pianist,
* * *
A good cabinet-work carpenter,
* * *
And a jolly good fellow.
* * *
You never hear a word
* * *
Of complaint from him.
* * *
He is the happiest man
* * *
I have ever met.
* * *
Those of us, who have
* * *
All five senses,
* * *
Sure ought to be ashamed,
* * *
When we carry a grouch around with us
* * *
Or do things in a half-hearted way.

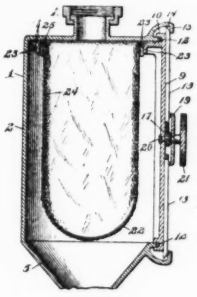
Patents

Plumbing Department.

1,285,055. Flushing Valve for Water Closets. Andrew F. Curtin, Medford, Mass. A flushing valve for water closets comprising a hollow body portion having an inlet and an outlet, a valve for normally closing the inlet, and a float connected with the valve consisting of a bell and a bottom plate, said bottom plate having an upturned marginal flange for connection with the bell, and a downturned central flange, a relatively heavy centerpiece screwed into the central flange and having an opening by which water may flow out of the float and into the hollow body portion.



1,285,055

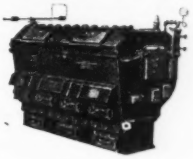


1,284,944.

1,284,944. Sink Trap. Octave J. St. Pierre, Chauvin Alberta, Canada. A trap for use with kitchen sinks comprising a casing having an inlet at its top and an outlet at its bottom, a removable cover closing the open front of said casing, means for securing said cover in position, a supporting ring carried by the cover, and a bag carried by the ring and depending therefrom and removable with cover.

1,286,012. Thermostatic Controller for Gas Water Heaters. Harold Jarvis, Toronto, Ontario, Canada. In a thermostatic controller for gas water heaters, the combination with a thermostatically operated break joint arm having an armature at its outer end and a magnet adapted to attract said armature, of a bracket extending over the gas outlet arranged beneath said armature, a valve for closing the gas outlet having its stem extending through said bracket and through said armature, a spiral spring encircling said valve stem between the valve and bracket and holding the valve to its seat, and an adjustable stop on the valve stem above the armature adapted to be engaged by the armature to raise valve from seat.

1,285,629. Hydraulic Ram. Frederick C. Crowe, North Yakima, Wash., assignor to Henry W. Coolidge, Chicago, Ill. In a hydraulic ram, a casting designed to form a chamber and provided with an inlet and a pair of outlet ports, means to supply water to the inlet port, check valves in connection with one of said outlet ports, a plate adjustably secured to the casting and having an opening therein registering with the other outlet port, said plate being provided with a valve seat adjacent the opening therein, a ball valve in said chamber adapted to co-operate with said valve seat, a track way pivoted at its outer end to said plate and inclined downwardly within the chamber to form a guide for the ball valve and a yielding buffer carried by the casting and projecting in the opening of said plate to co-operate with said ball valve.

ECONOMY  EFFICIENCY

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Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler
Saves Fuel Labor
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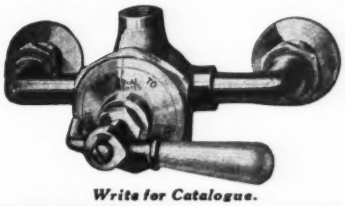
Simple in Operation—Few Working Parts.



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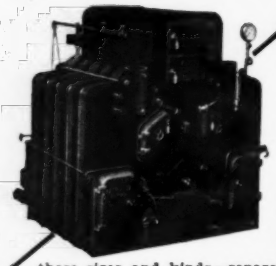
Building Bigger Business
Install **"SANIDOME"**
Bibbs, Bath and Basin Cocks
Your Customer Will Pay More and Make More Profit For You
Write for information
THE HAYDENVILLE COMPANY
HAYDENVILLE, MASS.



The Newport

The Magazine Feed Boiler with the Adjustable Throat

The Patriotic Boiler

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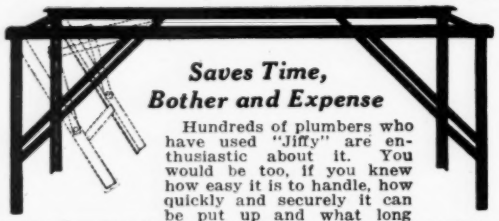
The "JIFFY" Collapsible Laundry Tray Frame



Saves Time, Bother and Expense

Hundreds of plumbers who have used "Jiffy" are enthusiastic about it. You would be too, if you knew how easy it is to handle, how quickly and securely it can be put up and what long years of service it will give. Made of heavy angle iron. Braces of heavy steel, coated with durable black paint. It's a money maker for you. Go see the "Jiffy" at your jobber.

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are high grade, insuring maximum service and minimum expense
PHILIP HAAS CO., DAYTON, OHIO

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Save 15% on Fuel
It is your patriotic duty to install them. They are light, compact, quick-heating and save space. Can be hung on wall.
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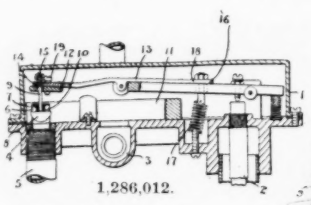
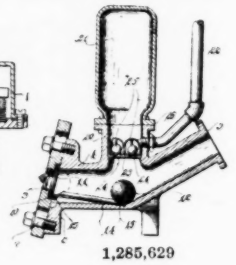
ALLEN NON-ACID SODERING STICK at it since '93

is a quick-seller and a sure repeater. Put our striking display carton on your counter, and watch it pile up these profitable 30 cent sales. Descriptive circular on request. L. B. ALLEN CO., INC., 4526 No. Lincoln St., Chicago, Ill.

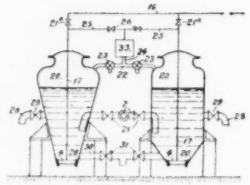
1,286,017. Purification of Sewage and Analogous Liquids. Walter Jones, Stourbridge, England. The process of purifying sewage or analogous liquid, consisting in delivering air into the liquid in the presence of bacterial sludge; collecting the air liberated from this sewage or other body of same; and delivering it into and passing it through sewage or liquid in another tank or body.



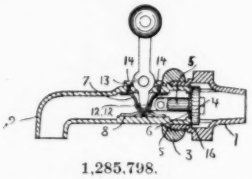
1,286,012.



1,285,629



1,286,017.

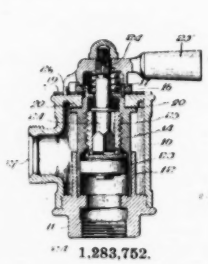


1,285,798.

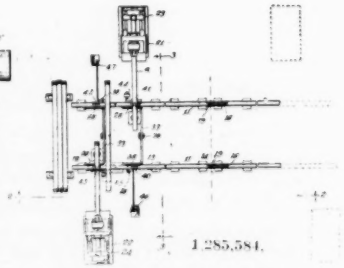
1,285,798. Faucet. Alexander B. Roney, Chicago, Ill. In a faucet, a slotted opening through the wall of the spout, a slidable shoe covering said opening, a spring holding the shoe seated on said wall, a valve seatable with the pressure pivoted to said shoe, and a handle lever fulcrumed exterior of the spout having its shorter arm engageable with said shoe.

Heating Department.

1,283,752. Valve. Charles V. Haynes, Philadelphia, Pa. In a valve of the character set forth, in combination, a casing the top of which is graduated, a plug carrying a stationary slotted sleeve carried by the lower end of the casing, a rotatable sleeve the lower end of which is dotted and adapted to turn within said stationary sleeve, and the upper end of which projects through the top of said casing and is threaded and furnished exteriorly with a number of vertical notches, a dial plate furnished with a detent adapted to enter one of the notches in said rotatable sleeve and with a slot on its periphery one end of said slot being adapted to register with the graduations on said casing top, a nut adapted to be screwed down on the threaded upper end of rotatable sleeve to fasten said sleeve and dial plate to said casing, a valve within the lower part of said rotatable sleeve, and means whereby said valve may be raised or lowered.



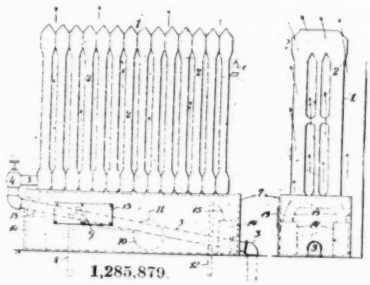
1,283,752.



1,285,584.

1,285,584. Machine for Handling Pipes. Joseph E. Baines and Joseph W. Latshaw, Pittsburgh, Pa., assignors to the National Tube Co., a corporation of New Jersey. In combination with a pipe runway, rollers for feeding the pipe across the runway and means for transferring

the pipe alternately from the runway to said feed rollers and from the feed rollers to the runway, comprising pivoted transfer lever having free ends for arresting the travel of the pipe along the runway, inclined cam surfaces for engagement with the pipe carried by the feed rollers whereby upon the upward movement of said levers the pipe is raised from the feed rollers and caused to roll forward onto the runway, and abutments arranged to arrest the travel of the pipe along the transfer levers.



1,285,879.

1,285,879. Method of Diffusing Water Vapor in the Atmosphere of Rooms. Jonathan Wright and William H. Marshall, Pleasantville, N. Y. A method of diffusing water vapor in the atmosphere of a room consisting in providing an open topped receptacle for water in close proximity to but beneath a steam radiator, heating the water to evaporate the same by passing the steam supply pipe inclined through the water receptacle to the radiator so that the water is subjected to the heat from the pipe before the steam reaches the radiator, maintaining a constant predetermined relation between the height of the water in the receptacle and the amount of the surface of the steam supply pipe covered thereby while permitting regulation of said height, maintaining the radiator at a temperature above the temperature of the water vapor from the receptacle, passing the water vapor upward from the exposed surface of said receptacle in an unobstructed path directly to and around said radiator, expanding said water vapor by contact with the surfaces of said radiator and bringing the expanded vapor in the path of a current of hot air within and around said radiator to diffuse the same through the room.

1,285,990. Thermostatic Heat Regulating Valve Mechanism. Edward S. Halsey, Yonkers, N. Y. In a device of the character described comprising a vaporizing expansion chamber, said chamber including a solid fixed vertical plate constituting the base of said chamber and a diaphragm member having air tight connection at its outer edge with said plate, said diaphragm member being adapted to expand or contract in directions away from and toward said plate; a liquid filled reservoir for causing the movements of said diaphragm by the injection and withdrawal of its vaporizable and condensable fluid into and from the said expansion chamber; a duct for conveying said fluid from said reservoir, said duct leading through the bottom edge of said fixed plate so as to directly drain any unvaporized fluid from the bottom of said chamber upon the contraction of the fluid in said reservoir; and a sealable hole through the top portion of said plate for the purpose specified.

1,285,772. Steam Trap. Louis R. Mertens, Philadelphia, Pa., assignor to Charles J. Miller, Philadelphia, Pa. In a steam trap, the combination with a tank having an inlet and an outlet, of a discharge valve controlling the outlet, a cylinder, a steam valve controlling the admission of steam from the tank to the cylinder, a piston in

POP-UP POP-UP POP-UP
FOR
BUILT IN BATH TUBS
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630 N. FRANKLIN ST. CHICAGO, ILL.

ELECTRIC HOUSE PUMPS
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WATER SUPPLY SYSTEMS
Suction Pumps and Complete Water Supply Systems
pumping capacities 120 to 1,000 gallons per hour. Efficient Deep Well Pumps with Hyatt Roller Bearings and silent chain drive, pumping capacities 150 to 2,000 gallons per hour. Write for bulletins and price sheets.
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Insure permanent expansion the entire length of screw inserted. Expansion begins at first turn of screw, screw making its own thread. No pipe sleeves or wedge nut required. For machinery, electrical work, steam and gas pipe, hanging signs, slate, marble or tile work, the LITTLE GIANT is best.
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LOOK FOR NATIONAL THE NAME
¶ "NATIONAL" Pipe serves mankind in so many capacities that it may truly be called a great public servant.
¶ A "NATIONAL" SERVANT is the title of a page announcement to appear February 1st, in which the important service rendered by "NATIONAL" Pipe will be set forth in an interesting manner.
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SPOT CASH
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Water Supply Systems Satisfy

When you install one ROBERTS outfit in a neighborhood it invariably results in many more sales, because of its satisfactory operation. The owner of a farm or country home who uses the ROBERTS service, is glad to tell others and recommend it to them.

ROBERTS House Pumps and complete Water Supply Systems are built for service and guaranteed to stand up on their merits wherever used.

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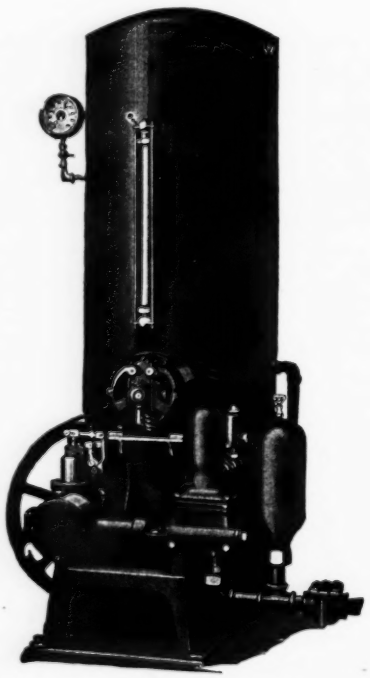
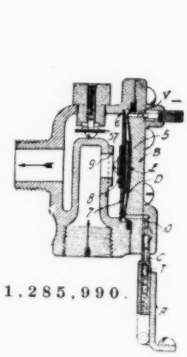
There is a ROBERTS suitable for every pumping requirement. Write for detailed information.

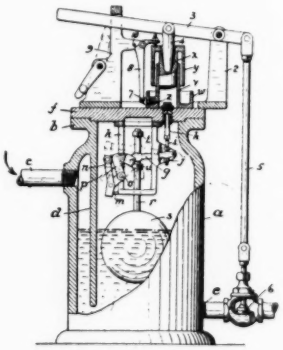


The GEO. J. ROBERTS CO.
DAYTON, OHIO

the cylinder, connections from the piston to the discharge valve adapted, when the piston is steam actuated to be operated to close the discharge valve, valve-control mechanism connected with the steam valve and adapted in opposite positions to hold the valve respectively open and closed, and a float in the tank movable independently of the valve-control mechanism throughout the greater part of its movement up or down, but adapted, as it approaches its upper and lower limits of movement, to move the valve-control mechanism away from its valve opening and valve-closing positions respectively.



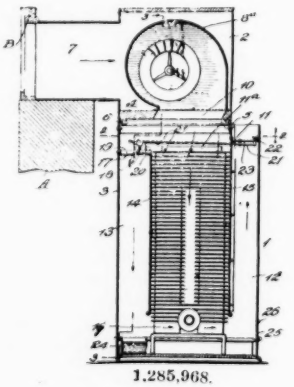
1,285,990.



1,285,772.

1,285,983. Air Valve Casing. Henry F. Goetz, Waterbury, Conn., assignor to Waterbury Mfg. Co., Waterbury, Conn. An air valve casing comprising a sheet metal casing body having its rounded end formed with a concentric opening the edge of which is turned inward or spiled to form a retaining flange, and a separately formed casing neck having its outer end externally threaded and its inner end internally threaded and having its inner end formed with an abutment flange to rest upon the said casing body around the concentric opening therein and with a retaining flange adapted in diameter and length to fit within the said opening and to be turned outward over the retaining flange of the body so as to firmly unite the two parts.

1,285,983



1,285,968.

1,285,968. Ventilator Unit. Frederic A. Finegan, Flushing, N. Y. A ventilating unit embodying a housing provided with an upper compartment and a lower compartment, the upper compartment having an air intake, a blower and means for rotating said blower, and the lower compartment having partitions dividing the same into a main duct, a discharge duct at one side of said main duct and a shunt duct at the opposite side thereof, a heater within the main duct, means for regulating the supply of

air to the shunt duct, and a passageway through the main duct communicating with the shunt duct on one side and the discharge duct at the other.

1,285,91. Temperature Regulating Valve Mechanism. Edward S. Halsey, Yonkers, N. Y. In a steam supply valve a body housing a throttle; a flexible expanding chamber in said body connected to said throttle; an externally cool condensing chamber above said expanding chamber; a catch basin for said condensing chamber; a drip valve between said basin and lower expanding chamber; an external primary actuating thermostat in working engagement with said drip valve; and a thermal insulating neck between said externally cooled chamber and the heated body of said valve consisting of a relatively poor conducting metal alloy.

MILWAUKEE EXPECTS GREAT BUILDING BOOM

Milwaukee will experience a busy building season this year. "The prospect for building operations and activities on a large scale is full of promise for the year 1919," said Building Inspector William H. Harper, recently in an interview in the "Wisconsin News," "and unless all signs fail, we shall have a good-sized boom."

"There will necessarily be a readjustment to changed conditions which undoubtedly will involve large demands upon labor. Take for example the possibility of the saloon buildings in our city having to be changed and remodeled for other commercial uses when the prohibition law goes into effect next July.

"We also must take into consideration the question of proper housing facilities which is now being taken up. We shall have a large number of our boys returning from 'over there' whose first thought will be that of matrimony and they in turn must be properly housed and provided with living accommodations. No question can be entertained that skilled labor will be in big demand.

"Many factory buildings will, by force of the changed conditions, be remodeled and enlarged to meet the needs of immediate and prospective uses. New factories, new homes, new buildings of all descriptions will be erected if our city is to keep step with the procession of new ideals and possibilities which make for the progress and success of our national life."

Referring to the larger building projects which have been or will be started in all probability, this year, Mr. Harper mentioned the following: Proposed new court house, $2,000,000; Wisconsin National Bank, $500,000; new proposed county and emergency hospital, $1,000,000; public market building, $250,000; school, $175,000; Bay View High School, $250,000; Cutler-Hammer additional unit to plant, $150,000; Milwaukee Paper Box Co., $225,000 plant; Evangelical Lutheran Congregation Church, $60,000; National Exchange Bank, new building, $250,000; Western Electric Co., plant, $80,000; Standard Oil Co., distributing station, $150,000; H. Schmidt Co., garage and manufacturing building, $100,000; Luick Ice Cream Co., additional unit, $40,000.

Clyde, Kans.—Martin Peterson has purchased the late John Pearson's plumbing and heating business in this town.

Elizabeth, N. J.—The Elizabeth Plumbing Co. has been incorporated with a capital of $25,000. The incorporators are: Morris Goldstein, A. Goldstein and Morris Esocoff, all of this city.

Newark, N. J.—The Frey Plumbing & Heating Co. has been incorporated with a capital of $100,000, to conduct a plumbing and heating business. The incorporators are: A. Frey, Harry Castellbaum and C. Frey, all of East Orange.

More Heat —Less Coal

By using the

TRADE PENBERTHY MARK

HYDRAULIC VACUUM PUMP

For Return Pipe Line Systems

List Price $35.00

2-Year Guarantee

Distinct Advantages:

1. Reduces the coal bill 20 to 35%.
2. Gets heat into the whole radiator quicker.
3. Most economical installation.
4. Maintenance cost negligible.
5. Shuts off automatically.
6. Discharges foul air into sewer.
7. Eliminates water hammer in radiators.
8. Has all the virtues and none of the objections that you find in the more elaborate and expensive devices now on the market.
9. Can be operated wherever city pressure water is available.
10. Heat as you want it, when you want it.
11. No motors or complicated mechanism to require constant attention.
12. Made by the Penberthy Injector Co., of Detroit, Mich. (which is sufficient guarantee that it is all it is represented to be.)

Penberthy Injector Company

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Classified Advertisements

The charge for advertisements under this heading is $1.00 for 25 words or less, including heading and address; 4 cents each for additional words. To insure insertion, copy and remittance should reach us by Wednesday morning.

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WANTED — EXPERIENCED BRASS salesmen. Good territories open. Schwander Brass Mfg. Co., St. Louis, Mo. 12-28 tf

WANTED—SALESMAN OF PLUMBING specialties, brass goods and supplies, for the state of Michigan or Indiana. One who has a good business established. Address 2592, care "Domestic Engineering," Chicago. 1-18

WANTED—BY CHICAGO JOBBER OF plumbing and heating supplies, man thoroughly familiar with this line for inside position. Must be good at figures and detail work. State age, references, etc. Address 2593, care "Domestic Engineering," Chicago. 1-18/4

WANTED—EXPERIENCED PLUMBING and heating salesman acquainted with trade in Central and Western New York. Give details as to age, experience, etc. Address 2588, care "Domestic Engineering," 407 S. Dearborn Street, Chicago. 1-4;11;18

WANTED—EXPERIENCED SALESMEN selling manufacturers' lines direct to the plumbing trade in the West, South and Southwest, to handle a special proposition which will pay good money and not interfere with your present line. We have been selling the plumbing trade for the past fifteen years and are well known and established in the East and now desire to extend our business on several of our well known specialties. All communications strictly confidential. Address 2586, care "Domestic Engineering," Chicago. 12-28/1-18

SALESMEN WANTED — TO handle a high grade specialty as a sideline. Plumbers use one or more on each job where soil pipe is used. Bell Specialty Co., 1205 W. Grand Ave., Des Moines, Ia. 12-21-5

WANTED PLUMBING SALESMEN—calling on plumbers regularly, to sell range boilers on commission. Excellent proposition. Only capable, experienced men desired. State territory covered, lines handled, etc. Reply confidential. Address, Pennsylvania Range Boiler Co., Philadelphia, Pa. 1-4/25

For Sale.

FOR SALE—WHOLE OR HALF INTEREST, plumbing and heating business. One other firm in city of 6,000. One of the most prosperous county seats of northwestern Iowa. Would sell stock, tools and lease house and shop. Man must be practical plumber to take half interest. Compelled to leave business for a while at least, owing to wife's health. Right place for right party. $2,000 worth of work on hand. Box 192, Cherokee, Iowa. 1-18; 25

Partner Wanted

WANTED—A MAN HAVING FROM $25,000 to $40,000 to join with the advertiser who will put in a like amount to start a factory to manufacture plumbing supplies. This is a high class proposition and will stand the strictest investigation. Address 2591, care "Domestic Engineering," Chicago. 1-18; 25.

Miscellaneous.

WANT GOOD STAPLE LINE TO SELL jobbers in Illinois, Indiana, Michigan, Wisconsin, Minnesota. Commission basis. Have extensive acquaintance. Excellent references. Address 2587, care "Domestic Engineering", 407 S. Dearborn St., Chicago. 1-4;11;18

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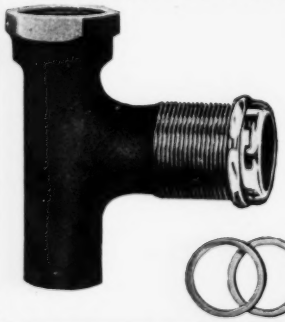

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